

Railway Age

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Where Does Co-operation Begin?

THE Railway Clerk, which is the official journal of the railway clerks' union, goes to some trouble editorially to tell us that we do not know what co-operation between management and employees means. In our issue of February 14 we published an editorial note discussing some of the difficulties of bringing into effect a co-operative program, mentioning as one of the most troublesome that fact that it could not be brought about merely by executive order. Specifically we said: "It is true that company policy in these matters can be decided only by the higher executives, but men further down the line must learn to know and appreciate what is being done and what can be done." This, so the Railway Clerk maintains, "is just what co-operation is not." And it goes on to suggest that we read up on the Baltimore & Ohio co-operative plan to learn something about the subject. The fact of the matter is that when our editorial was written we had the Baltimore & Ohio plan definitely in mind. This plan was originally worked out in conferences between President Willard and his staff on the one side and W. H. Johnston of the machinists' union and his associates on the other. When the plan had been agreed upon, did these executives simply issue a proclamation to the effect that co-operation was now in effect? They did not. The plan was installed very slowly at first and in only one shop. And at this shop a consulting engineer was stationed, whose principal function was educational—showing the employees and the local officers that real co-operation, not just talk, was to result from the policy agreed upon by the management. Is this not a clear and convincing instance of the point we made, viz., that, while co-operative plans must be approved of by the management, the real problem of putting them into effect is educational—showing the men down the line that a real bona fide plan and not just a new line of talk is intended? The Railway Clerk apparently thinks that management-employee co-operation ought to begin spontaneously between the employees and subordinate officers and then gradually filter up to the executive officers of the railroads and organizations of employees. This might be the best way to have it start, but must an era of co-operation on the railroads await the millennium?

Railway Fuel Association Program Promising

PRESENT indications leave little room for doubt that the seventeenth annual convention of the International Railway Fuel Association, which is scheduled to be held in Chicago on May 26-29, will be the most successful in the history of this organization, not only in point of attendance but in the quality of the reports and papers presented and the exhibition. The program for this convention, which was published on page 1051 of the Rail-

way Age of April 25, has been prepared with great care with a view to broadening the scope of the association's work and making it an increasingly important factor in securing more efficient railroad operation. Practically every railroad officer who has any connection with the purchase, handling, or use of railway coal and fuel oil will find something of direct, practical interest and value to him somewhere in the program. To the man in the operating department, the paper "How Can Railroad Managements Effect Fuel Economy," by A. R. Ayers, assistant general manager of the Nickel Plate, will perhaps be of most interest. Purchasing and stores officers responsible for ordering and handling railway fuel will doubtless find much food for constructive thought in the paper by H. C. Pearce, director of purchases and stores of the Chesapeake & Ohio, on "How Can Fuel Purchases Effect Economy?" The way in which mechanical officers can influence fuel economy will be discussed by John Purcell, assistant to the vice-president of the Atchison, Topeka & Santa Fe. The grouping of reports and subjects considered on the second and third days of the convention under the headings "Operating Day" and "Mechanical Day" is an innovation designed to permit railroad officers other than strictly fuel men profitably to attend the convention on the day on which subjects of particular interest to them will be considered. The assignment of a definite time for each paper, report and discussion assures a business-like convention in which the maximum returns will be obtained from the time expended. Few mechanical department officers from the head of the department down to the humblest round-house foreman will fail to find something of interest, inspiration and value in the coming convention of the International Railway Fuel Association. Attendance at the convention may well be encouraged. The opportunity to study at first hand the many fuel saving devices and equipment exhibited will alone be worth the cost of the trip to Chicago.

Increase Track Capacity by Eliminating Train Stops

THE good work started by the Signal Section at its March convention in promoting the study of train operation by signal indication without train orders has received favorable comment from several quarters. The information set forth in the papers presented at that convention has been and is being studied by more than one operating officer with the purpose of adapting the methods of train operation described therein to their own roads. Under the double order system of train orders now in common use for the dispatching of trains it is difficult to get orders out quickly to meet new situations without consequent train delays. Where all the needs for directing trains can be anticipated and the orders gotten out in advance the train order system meets the require-

ments satisfactorily. Such a condition exists on light traffic lines, but where traffic is heavy some minor condition is constantly developing to upset the best laid plans of the dispatcher. A train may be laying on a siding for a meet with an opposing train that is delayed on account of a hot box, a bursted air hose, or a falling brake beam. The train on the side track should be advanced, but by the time new orders can be gotten out so much time will have been consumed that the train delayed by the minor trouble will again be ready to move. Therefore, the dispatcher lets the "meet" stand, whereas if he could have directed the train on the siding to move out at once by a signal indication this train could have been advanced at least one or perhaps two stations. The uncertainty as to when trains will be ready to leave a yard or a junction where cars are picked up or dropped makes it likewise difficult for the dispatcher to anticipate their needs. To meet this situation and to insure giving important trains a clear track when ready, many restricting orders are issued that are never fulfilled, but serve to delay dead freight trains. Many of these delays could be avoided with a signaling system that would authorize a train to move the very instant it was all ready to go and the track was clear for it. On the average busy single track division now working close to capacity with train orders, the installation of a system of automatic signals will eliminate many of the delays mentioned and should decrease the average time of freight trains between terminals from 30 minutes to an hour. This will not only increase the capacity of the line, but reduce the cost of operation, especially if this reduction of running time reduces overtime. As a method of increasing track capacity and reducing operating costs signaling deserves due consideration.

"You Can't Tell It After They're Treated"

DECAY is the greatest enemy of ties and other timber. It is the agency which determines the service life of ties in all but the heaviest traffic. It is to control and check the ravages of this destructive agent that ties are impregnated with creosote and zinc chloride. The necessity for and the value of this protection have become appreciated to such an extent in recent years that more than 50,000,000 ties, or over half the annual consumption, are now treated with preservatives annually and this ratio is increasing steadily. Yet in spite of this appreciation of the importance of protecting tie timber from decay, we still see many evidences of lax practices in this regard.

If a road is to secure the maximum service from its ties, it is axiomatic that it must start with a timber free from decay. It must then protect this timber from infection during the time required for seasoning and must treat it properly with preservatives as soon as it is in condition to receive them. The American Railway Engineering Association specifications, under which the large majority of the ties are now being purchased, provides that in the timbers commonly used, "ties will be rejected when decayed in the slightest degree." To do other than to comply with this requirement is to court disaster. Yet hundreds of thousands of ties are being accepted today in which decay is plainly evident. In fact, the inspectors and even the officers in charge of tie purchases on some roads are openly approving this practice on the ground that it is necessary in order to conserve our timber re-

sources. This argument would have weight if it were not for the fact that the overwhelming majority of these ties are either produced from timber which is known to be decayed before it is cut or are permitted to decay because of lax practices in storage, which practices would not be permitted if it were known that they would result in the rejection of the timber.

To condone decay in even the slightest form is to give approval to a practice which, once started, may be difficult to stop. If a tie with a slight amount of decay is accepted, it is difficult to reject a tie with only a slightly greater amount. One deviation leads to another, particularly when left to the enforcement of a large number of inspectors, working independently over a wide area until serious abuses become prevalent.

It is true that a marked improvement is evident in the character of ties that are being accepted today as a result of the more general education of railway officers to the necessity for more strict adherence to the requirements of the specifications. However, the deviations from these specifications are still sufficiently serious to cause a loss of many millions of dollars to the railways annually. One need make but the most casual investigation of conditions in the tie producing areas to convince himself that not only are many ties being produced which are defective when cut, but they are being stored under conditions which are conducive to decay. Practically all of these ties eventually find their way into the tracks of some railway to the ultimate loss of that road. As an illustration, not long ago a member of the *Railway Age* editorial staff who was visiting one of the principal tie producing areas questioned the man in charge of the operation of loading a large number of ties, many of which were plainly seriously decayed, and in reply to a question regarding the advisability of loading ties for shipment in that condition was greeted with the statement that "You can't tell them when they're treated". Such an attitude is the logical result of the acceptance of decay in even the slightest form, for once an exception has been made, it is difficult to determine where to draw the line and then to enforce it.

How "Readjustments" Destroy Earning Capacity

THE entire broad question of how railway rates should be made has been raised by two recent developments. One of these is the passage by Congress of the Hoch-Smith resolution directing the Interstate Commerce Commission to conduct a sweeping investigation to determine what general readjustment, if any, should be made in freight rates. The other is the filing by the western roads with the commission of a petition for a general advance in rates upon the ground that the present rates will not yield an adequate net return as defined by the commission and the courts.

There are two federal government bodies, the Interstate Commerce Commission and the Railroad Labor Board, whose decisions mainly determine the net return earned by the railways. The return earned by them is also in a large measure determined by the efficiency with which they are operated and by the policy of their officers in dealing with rates and wages. The commission fixes most rates, but railway officers initiate many changes in them.

Likewise most of the wages paid are due to awards made by the Labor Board, but the compensation at present received by many employees is the result of

direct negotiations between the employees and the managements. The net return earned is of vital importance not only to railway security owners but to the public because upon it depends the development of the railways as an instrumentality for rendering economical and adequate transportation service.

The Interstate Commerce Commission and the Railroad Labor Board have from time to time since the Transportation Act has been in effect rendered decisions making general changes in rates and wages. Such decisions have attracted widespread attention, and it is commonly assumed that they, together with the way the roads have been managed, have determined the financial outcome of railway operations. In addition, however, to general changes in rates and wages, there constantly go on readjustments of both which attract little attention but which in the aggregate are of great importance. Since extensive "readjustments" of rates are now under consideration, this is an opportune time to emphasize with actual facts and figures that so-called "readjustments" of rates and wages may be not only important, but a matter of life and death to private ownership and management of railroads. Furthermore, it is a good time to raise the vital question of why all "readjustments" of rates should consist of reductions and all "readjustments" of wages should consist of advances.

On July 1, 1922, the Interstate Commerce Commission put into effect a general reduction of 10 per cent in all freight rates except on farm products, the rates on which already had been reduced at the beginning of the year. There was at the same time put into effect a general reduction of wages which had been awarded by the Railroad Labor Board. In public discussions of the railroad problem it has usually been assumed that no important changes in rates and wages have been made since then. It is well known that the railways have not meantime earned the $5\frac{3}{4}$ per cent return on their tentative valuation to which the Interstate Commerce Commission has held them entitled. The blame for this usually has been put upon the rates and wages then fixed. But changes in rates and wages have been occurring ever since then. The *Railway Age* has made a study to determine the effect upon net operating income that has been produced by the readjustments of rates and wages that have been made since the new bases for them were adopted at the middle of 1922. This study discloses the significant and striking fact that if the rates and wages fixed at the middle of 1922 had been left in effect throughout 1923 and 1924 the roads would have earned in both those two years more than the $5\frac{3}{4}$ per cent net return on their tentative valuation.

Average receipts per ton-mile in the last six months of 1922, immediately following the general reduction of rates, were 1.138 cents. In 1923 and 1924 they were 1.116 cents. In comparing average receipts per ton-mile it is necessary to take into consideration the effect produced upon revenues by fluctuations of different kinds of traffic, especially coal. The average receipts per ton-mile in the last six months of 1922 form a reasonable basis for comparison because while coal traffic in the first half of this period was light, in the latter half of the period it was abnormally heavy. Coal traffic was much lighter in 1924 than in 1923, and from the fact that average receipts per ton-mile in the two years were the same the conclusion is inevitable that the general rate level was lower in 1924 than in 1923. There have been no general changes in passenger rates since 1922 but their tendency has been downward.

The loss of total earnings suffered by the Class I railways in 1923 because of reductions of rates below the

basis fixed in the latter half of 1922 was approximately \$87,500,000. The loss in earnings suffered by them in 1924 owing to the same cause was about \$97,000,000. These figures are arrived at by applying the reductions in average rates to the traffic actually handled in these years.

Meantime, as previously has been pointed out in these columns, the wages of employees have been gradually advancing. In the last half of 1922 the straight time wages of employees paid on a daily basis averaged \$7.45 per day; in 1923, \$7.67, and in 1924, \$7.76. Including overtime, etc., the average daily earnings of these employees in the last six months of 1922 were \$7.53; in 1923, \$7.75, and in 1924, \$7.85. About 90 per cent of all employees are paid on an hourly basis. The average straight time wages of these employees in the last six months of 1922 was 54.6 cents an hour; in 1923, 56.5 cents; and in 1924, 57.7 cents. Their average earnings per hour, including overtime, arbitrary allowances, etc., in the last six months of 1922 were 59.3 cents; in the year 1923, 60.3 cents; in 1924, 61.5 cents. The effect of these advances in daily and hourly rates of pay over those in effect in the last half of 1922, computations being based on days and hours for which employees were actually paid, was to increase the payroll of the railways \$54,160,000 in 1923 and \$104,130,000 in 1924.

Let us now measure the effect produced upon the net operating income by these reductions of rates and advances in wages. The total net operating income earned in 1923 was almost \$984,000,000, or 5.2 per cent on the tentative valuation. The reductions in rates and advances in daily and hourly wages in that year cost together more than \$141,000,000. If this additional amount of net operating income had been earned the net return would have been \$1,125,000,000, or 5.98 per cent on the tentative valuation. The net operating income earned in 1924 was \$987,000,000. The reductions in rates and advances in wages made, as compared with the bases established in the last half of 1922, amounted in 1924 to \$201,000,000. If this amount had been added to the net operating income of 1924 it would have been \$1,188,000,000, or about 6 per cent on the tentative valuation.

The western roads having asked for a general advance in rates, it is pertinent to inquire what effect has been produced on their net operating income by reductions of rates and advances in wages since 1922. Their average revenue per ton-mile in the last half of 1922 was 1.250 cents; in the year 1923, 1.228 cents; and in 1924, 1.209 cents. The average receipts per passenger mile received by them in 1924 also showed a decline. The loss of earnings sustained by them in 1923 due to reductions of rates below the basis established in the latter half of 1922 was \$29,500,000. Their loss of earnings in 1924 due to the same cause was about \$62,850,000. They pay about 37 per cent of total railway wages, and it is therefore reasonable to assume that they have borne this proportion of the advances in wages. This would indicate that advances in wages cost them about \$20,000,000 in 1923, and \$39,000,000 in 1924.

Their total loss of net operating income in 1923 due to reductions of rates and advances in wages was therefore about \$50,000,000. The net operating income earned by them was \$374,556,000 or 4.66 per cent on their tentative valuation. If they had received the additional amount withheld by reductions of rates and advances in wages the percentage earned by them on their tentative valuation would have been 5.28 per cent. Their net operating income in 1924 was \$378,100,000 or 4.54 per cent on their tentative valuation. The curtailment of their net operating income due to reductions of rates and

advances in wages amounted to about \$102,000,000. If their net operating income had been this much larger than it actually was in 1924 the return earned by them on their tentative valuation would have been 5.76 per cent.

These figures indicate that the western roads have suffered relatively more within the last two years from changes in rates and wages than the other railways, although their earnings have been such that they have been relatively less able to stand the losses than other groups of roads.

All the changes in rates and wages which have had such a serious effect on railroad net return cannot be attributed to the Interstate Commerce Commission and the Railroad Labor Board. Many reductions of rates have been made voluntarily either by individual roads for competitive reasons or by groups of roads to meet special conditions. Likewise part of the advances in wages has been made either without awards from the Labor Board or regardless of awards made by it. What the facts do show, however, is that during a period when there has been constant complaint from the railways that they had not earned and were not earning anywhere near what the Interstate Commerce Commission had held would be a "fair return" those who have had the responsibility of fixing their rates and wages have been constantly engaged in reducing the one and advancing the other. They have made so-called "readjustments" of rates and wages here and there each of which seemed relatively small, but all of which in the aggregate were sufficient to deprive the railways of \$142,000,000 of net operating income in 1923 and of more than \$200,000,000 of net operating income in 1924, and to prevent them from earning in these years a "fair return." The cumulative effect of these changes is being felt in the present year. In January, 1925, the net operating income earned was \$38,000,000 less than it would have been if the average rates and wages of the last half of 1922 had been in effect.

This process of constantly "readjusting" rates and wages with the result of constantly reducing the net return earned by the railroads is not new. It is a familiar one. It went on constantly for years before the war. Every time a railway thought it might gain some competitive advantage by "readjusting" rates it made some reduction. Usually other roads met the reduction and all of those concerned thereby lost earnings. Likewise before the war the Interstate Commerce Commission constantly made "readjustments" to remove alleged discriminations and almost invariably these were effected by reducing some rate or rates. Likewise in the past as at present alleged inequalities in wages were almost invariably remedied by advancing the pay of those who claimed that their wages were relatively too low.

And now the Interstate Commerce Commission is making a general investigation looking to "readjustments" of rates. The western roads are to be commended for appearing at this juncture with a petition for an advance in rates. A "readjustment" of rates may as well be effected by advancing some as by reducing others, and as long as any group of railways continues to earn less than the so-called "fair return" the Interstate Commerce Commission will not perform its lawful duty unless it adopts the policy of readjusting upward instead of downward the rates of that group of railways. Furthermore, it is evidently high time to give more consideration to the effects on railway net return being produced by the awards of the Railroad Labor Board and by readjustments of wages and rates being made by the managements of individual lines.

Articles in the May Railway Mechanical Engineer

D. L. & W. Coach Maintenance at Hoboken. A description of the methods used by the car department of the Delaware, Lackawanna & Western by which it has been able to increase the time between passenger car shoppings to a considerable extent. Page 280.

Burlington Rebuilds Eight Box Cars a Day at Aurora. The car repair shops of the Chicago, Burlington & Quincy at Aurora, Ill., have increased their output by a successful application of the station-to-station method and the installation of a production system. Page 284.

Booster Inspection and Maintenance. A description of the system used by the Lehigh Valley for the instruction of enginemen in handling boosters and the methods used in booster maintenance. Page 290.

A Versatile Tool for Locomotive Repair Shops, by Leroy R. Gurley. A discussion of the utilization of the horizontal boring, drilling and milling machine in railroad shop work. Page 295.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Canada's Great Highway: From the First Stake to the Last Spike, by J. H. E. Secretan. Author's personal experiences during building of C. P. R. 252 p. Pub. by John Lane, London, Eng. 7 shillings, sixpence.

Facts and Figures of the Automobile Industry, 1925 edition, compiled by Natl. Automobile Chamber of Commerce. See Index under "Railroads" for railroad motor services, freight shipments, etc. 96 p. Pub. by Natl. Automobile Chamber of Commerce, New York City.

Popular Ownership of Property: Its Newer Forms and Social Consequences, edited by W. L. Ransom, and P. T. Moon. Includes papers by Albert H. Harris, F. H. Wood, and others on diffusion of stock ownership on railroads. 198 p. Published as the April, 1925, issue of the Proceedings of the Academy of Political Science, New York City. \$1.00.

Running Special, by Frank L. Packard. 10 short stories about railroaders. 304 p. Published by George Doran, New York. \$2.00.

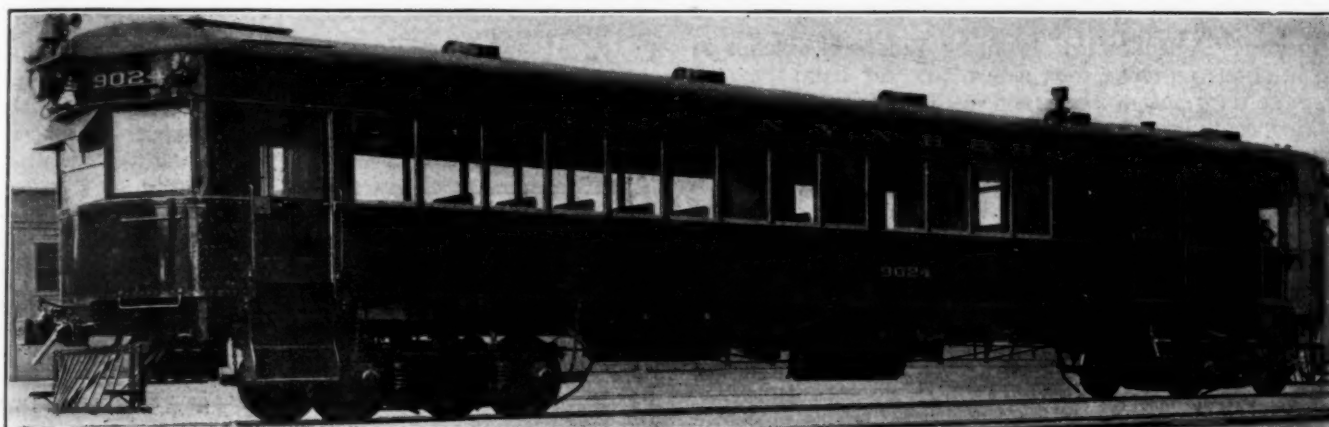
Scientific Research and Human Welfare, by F. S. Harris and N. I. Butt. Especially Part III—"Transportation." Appendix contains useful "Chronology of Scientific Discoveries." 406 p. Pub. by Macmillan, New York. \$2.50.

Periodical Articles

Factors Concerning the Economics of Shopping Steam Locomotives, by L. K. Sillcox. Mechanical Engineering, May, 1925, section 2, p. 419-425.

Formulas for Computing the Economics of Labor-Saving Equipment, by J. A. Shepard and G. S. Hagemann. Followed by paper on application of the formulas, by G. Langford, Jr., p. 408-410. Mechanical Engineering, May, 1925, section 2, p. 403-408.

The Monon Wreck, by James B. Elmore. Reprint of a frequently-requested old poem, with notes by Wilbert Snow. New York Herald Tribune Book Section, May 3, 1925, p. 12.

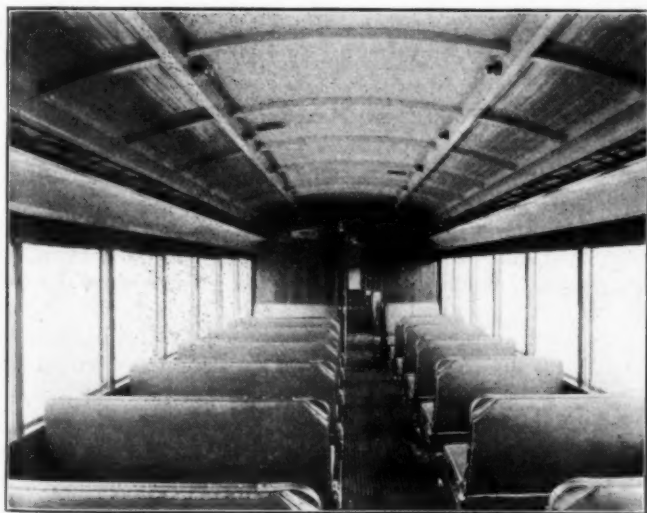


Gas-Electric Motor Coach Built for the New York, New Haven & Hartford by the J. G. Brill Company

Gas Electric Car for the New Haven

*Built by J. G. Brill Company—Has 180-hp. engine,
General Electric transmission and double-end
control—Seats 60*

A GAS-ELECTRIC motor coach, with a seating capacity for 60 passengers and a baggage compartment 11 ft. 3 in. long, has recently been built for the New York, New Haven & Hartford by the J. G. Brill Company, Philadelphia, Pa. The car in its essentials has been built to the specifications of the railroad and is



Interior View of the Passenger Compartment Looking Towards the Front

air heater. There are folding seats in this compartment for nine passengers. The smoking compartment, which is immediately in the rear of the baggage compartment, is 10 ft. 2½ in. long and has a seating capacity for 20 passengers. The main passenger compartment, which occupies the remainder of the car, seats 45 passengers. The seats in both passenger compartments, which were furnished by the builder, are arranged to seat two passengers each on the right side of the car and three passengers each on the left side of the car and aisle arms have been omitted. The shorter seats are 33 in. in length over-all, while the longer seats are 51 in. in length over-all, with a clear aisle 20 in. wide. All seats, except those against the partitions, are reversible.

At the rear end of the car is a vestibule 2 ft. 11 in. in width, with steps and O. M. Edwards trap doors on both sides. The vestibule side door openings have a clear opening of 2 ft. 6 in. wide. Back of the vestibule, occupying space at the middle and one side of the car is the rear end control compartment. Adjoining this compartment on the right side is the saloon.

Every effort has been made to keep down the weight of the car, without sacrifice of the strength essential for a car of this character intended for individual operation. The underframe is built up around two 12-in., 20.5-lb. center sills, which are unbroken from end sill to end sill. These sills are reinforced with channels of the same section, approximately 6 ft. long extending 3 ft. in each direction from the center of the front bolster. The side sills and end sills are of 3½-in. by 2½-in. by ¼-in. angles, each in one piece, the sills all being tied together with 3-in., 4.1-lb. steel channel cross ties which extend the full width of the body. Additional fastening is provided at the side sills by 3/16-in. pressed steel webs, the bolsters being of the box type with 3/16-in. by 10-in. steel cover plates top and bottom, while the transoms are of the single web type, with 6-in. top and bottom cover plates.

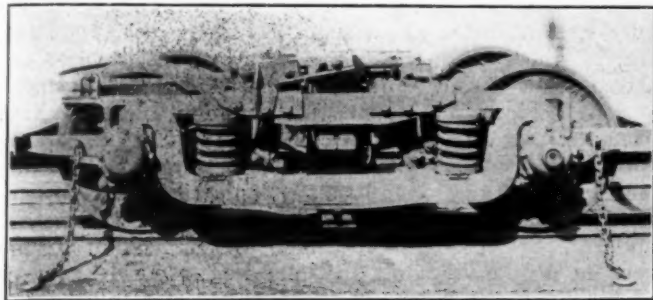
The principal members of the body frame are 1½-in. by 1½-in. by 3/16-in. T-bars framed into ash posts. The T-bars are securely riveted to the side and end sill angles at the bottom and to the end plates and side letter boards.

designed for double-end operation without a trailer. The car weighs 73,420 lb., of which 40,100 lb. is on the front truck and 33,320 lb. is on the rear truck.

The car is 60 ft. in length over end sills and is laid out in four principal compartments in addition to the vestibule at the rear end. The power plant and the forward control equipment occupy a compartment at the front end of the car, which extends back 10 ft. from the outside of the front end sill. Behind the power plant is the baggage compartment which is 11 ft. 3 in. long. In one corner of this compartment is located the Peter Smith hot

controllers in the forward direction, only, while series and parallel connections are available in both directions on each controller.

The engine throttle quadrant is fitted with a cut-out switch which controls the battery circuit to the exciter field. This switch is opened automatically by completely closing the throttle. In this position the engine continues to idle with the generator completely unloaded. With this arrangement it is unnecessary to touch the controller handle when making ordinary station stops, the entire control being effected through the throttle. When power is required to operate the air compressor and the blower



The Trucks Are Equipped with Timken Roller Bearing Journals

fan while the car is standing, the controller is thrown into neutral position and the throttle opened as far as may be required. This automatically closes the exciter circuit cut-out so that the generator takes up its load.

Each of the two control stations is equipped with a controller, a throttle lever, the Westinghouse traction brake valve and Duplex gage, the siren and bell ringer valves, headlight switch and starting motor button. The entire control of the car is thus placed in the hands of the operator at either end, a feature which affords little difficulty in the case of the electric type of transmission. In addition to the above equipment, in the engine room there is an instrument board which contains the oil pressure gage, a water temperature register, a tachometer showing the revolutions per minute of the crank shaft, and the ignition switch.

The Trucks

The trucks are of the Brill 27-M. C. B. type, equipped with Timken roller bearing journals and 33-in. Davis cast steel wheels. This truck, which is a well established design for use on electric suburban cars, has a number of interesting features from a steam railroad point of view. Probably the most interesting of these features is the truck bolster guide. This consists of links arranged to provide vertical and lateral flexibility of movement for the bolster, which connect the ends of the truck bolster to the truck transom. The reaction between the transom and the bolster caused by the traction of the power-driven axle or by the application of the brakes is transmitted to the bolster through these links without the usual reaction through chaffing plates which in a measure destroys the freedom of action of the springs.

Another interesting feature is the location of short coil springs between the top of the elliptic springs and the bottom of the bolster. These springs provide additional flexibility which comes into play under light loads when the stiffer springs below are less effective in absorbing track vibrations than when under heavier loads.

The spring plank is suspended between links which are held together at the bottom by a bolt, on the end of which is placed a spiral spring. This spring is drawn up in compression by the nut on the end of the bolt, thus pro-

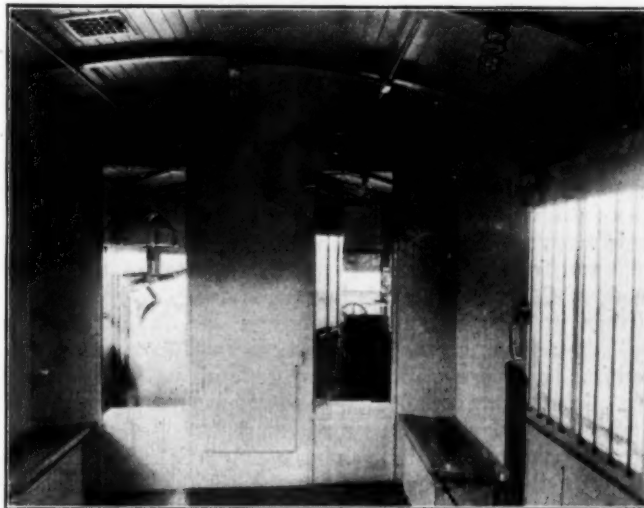
ducing a friction brake between the surfaces of the spring plank and the ends of the links, which considerably reduces the lateral freedom of motion of the spring plank.

General Characteristics

There are two features of electric transmission which are of particular value in connection with the use of the gas engine as a source of motive power. The most important is the complete flexibility of engine speed with respect to the torque of the driving axles. This permits the operation of the engine at approximately its best operating speed, the electric transmission taking care of the variation in speed and torque at the rail. Another feature is the possibility of having self-regulation to prevent exceeding the predetermined maximum engine speed by the proper design of the generator in relation to the engine characteristics. This is possible in principle because of the fact that the power output of the generator continues to increase in proportion to the armature speed considerably beyond the speed where the power output of the engine ceases to increase in proportion to its speed.

The combined efficiency of the generator and motors is low compared with the efficiency of a mechanical transmission in its operating ratio, usually direct gear. However, a part if not most of this loss in the efficiency of the transmission is offset by the improved efficiency of the engine because of its better engine operating conditions.

The New Haven car is designed to operate at a maximum speed of 57 miles an hour, and is expected to maintain average speeds on level track varying from 25 miles an hour with stops averaging one per mile, to 37 miles an



Interior View of the Baggage Room Looking Through the Engine Room Doors—The Location of the Operator's Seat Permits Observation Both to the Front and Rear

hour where the stops average one in eight or more miles. This is based on a conservative maximum acceleration allowance of 1.5 miles an hour per second. For a one per cent grade the average speed for the longer intervals between stops is reduced to approximately 27 miles an hour.

The J. G. Brill Company now has under construction a gas electric car, which will be equipped with a generator of 160-kw. capacity driven by a motor developing 250 hp. at 1,100 r.p.m.

IN THE *Railway Age* of January 3, page 29, was published without credit a photograph taken from an airplane of the Michigan Central's bridge over the Niagara gorge. This photograph should have been credited to Ronne & Washburn, 48 North Pearl street, Buffalo, N. Y., by whom it is copyrighted.

Western Roads Ask Increase in Revenues

WASHINGTON, D. C.

ASSERTING that the rates under which they are and have been operating are confiscatory, the western railroads have invoked the provisions of section 15a of the interstate commerce act by filing a petition with the Interstate Commerce Commission requesting it, in pursuance of the powers vested in it and the duties imposed upon it by that act, after due investigation, to "issue the necessary order or orders which will result in yielding to the carriers operating in the western district a net rate of return of not less than five and three-quarters per cent."

Based on the results of 1924, when the western roads had a net railway operating income of \$378,080,991, or a return of 3.87 per cent upon the book cost of road and equipment including materials and supplies and cash, an increase in revenues of approximately \$182,000,000 would be required to bring it up to the \$560,000,000 which would represent 5¾ per cent on the property investment. This would be about 11 per cent of the freight revenues of the western roads for last year, \$1,655,000,000. The roads, however, express the belief that traffic may be less and expenses greater in 1925 than in 1924. They offer no suggestion as to how the increased revenue should be produced and the petition is not in the form of the usual proposal for increased rates but is a petition "for an increase in revenue in their territory," which includes both the Western and the Mountain-Pacific groups designated by the commission.

The petition was signed by 66 western roads, including six that are in the hands of receivers. It follows a statement filed with the commission recently by the same roads of their views in relation to the commission's general rate structure investigation under the Hoch-Smith resolution, in which statistics were presented to show that the situation of the western roads is such as to call for advances in their rates rather than reductions. That statement urged the commission to make an investigation of the revenue needs of the western roads but they have now gone a step farther in filing the formal petition for an increase.

The statistics given in the former statement and in the petition show not only that the general increase in rates made in 1920 was inadequate to produce the contemplated return but that reductions made since have so reduced the average revenue per ton per mile that it is now only 10.1 per cent above the average for the period before the increase of 1920.

After stating that these roads since the passage of the transportation act, 1920, have never earned and are not now earning a fair return upon the aggregate value of their property, "notwithstanding that they have been and are now operated under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment", the petition says the western roads have averaged only 3.61 per cent for the four years 1921-1924 upon the book cost of road and equipment, including materials and supplies and cash, and including switching and terminal companies (3.55 per cent excluding switching and terminal companies) and that the rate for 1924 was only 3.87 per cent or less than it was in 1923, when the rate was 3.96 per cent.

"The rates yielding such low returns, the petition says, "were and are confiscatory. Under such earnings it is impossible for your petitioners to maintain the adequate transportation system contemplated and directed

by Congress. The credit of petitioners has been impaired. It is now impossible to procure necessary capital by the sale of stock or to obtain money by the issue of bonds under reasonable terms.

"Your petitioners aver that since the year 1921 there has been a steady decrease in freight rates in the western district, as indicated by the following figures, which set forth the average revenue per ton mile in that territory:

Years	Revenue	Years	Revenue
1921.....	14.22 mills	1923.....	12.27 mills
1922.....	12.92 mills	1924.....	12.09 mills

"Under the order of the Interstate Commerce Commission in Reduced Rates, 1922, 68 I. C. C. 676, effective July 1, 1922, there was a reduction of ten per cent in all freight rates throughout the western district, but the actual reduction since 1921, compared with the calendar year of 1924, is approximately 15 per cent. The reduction over ten per cent was caused by various orders of the Interstate Commerce Commission respecting rates on grain and livestock and other commodities, as well as by reductions made by the carriers compelled by commercial and competitive conditions. The present actual average revenue is approximately 16½ per cent below the average prescribed in Ex Parte 74, August 26, 1920.

"A comparison between 1919, the first full year prior to Ex Parte 74, having average earnings of 10.98 mills per ton per mile, with 1924, having average earnings of 12.09 mills per ton per mile, demonstrates that the average revenue per ton per mile is now 10.1 per cent in excess of the average revenue per ton per mile immediately preceding Ex Parte 74.

"It is the belief of your petitioners that in the year 1925 the volume of and the earnings from their freight traffic will be no greater and will probably be less than they were in the year 1924, and that the volume of and earnings from other traffic will be substantially less, while the operating expenses will be at least as great as they were in 1924 and probably greater.

"Your petitioners show that in fields of other public service and of commercial and industrial activity, earnings as high as six, seven and eight per cent have been sustained by the courts as not unreasonable. The courts have declared to be confiscatory returns below six, seven and eight per cent. Under the provisions of the transportation act, the Interstate Commerce Commission, as the agent of the government of the United States, has in numerous instances loaned money to carriers at the rate of six per cent. In view of these facts your petitioners aver that revenue yielding even five and three-quarters per cent, the basis established by the Interstate Commerce Commission in accordance with the authority vested in it by the transportation act, would not provide just compensation in these times.

"Your petitioners aver that because of the confiscatory rate of return under which they are and have been operating, as hereinbefore set forth, their condition has become precarious and they are in need of an immediate increase in revenues which should become effective with the least possible delay."

Reference to the fact that the commission for the purposes of the 1920 rate case adopted a tentative valuation for the western district lower than the investment account by 8.1472 per cent was made in the statement filed in connection with the Hoch-Smith investigation but it was stated that the carriers were presenting figures based on the investment account only "because we are confident that a re-examination now, in the light of the additional information since developed, will sustain a value for carriers in the western district as a whole equal to or higher than their investment accounts."

Show Cost of Waterway Transportation

Arguments for and against river transport advanced at annual meeting of American Society of Civil Engineers

A SYMPOSIUM on the relation of the Ohio river and its tributaries to transportation in the United States, in which the heavy cost of waterway transport was shown in detail, was a feature of the first day's program of the fifty-fifth annual convention of the American Society of Civil Engineers in Cincinnati, Ohio, on April 22. C. W. Kutz, Colonel, Corps of Engineers, U. S. Army, division engineer, Central division, speaking in favor of waterway transportation, summed up the case for waterways by contending that water transport is the cheapest transport and the public is therefore entitled to

it. Frank H. Alfred, president and general manager of the Pere Marquette, took the opposite view, checking the cost of waterway transportation to show that it is twice as great as that of rail transportation.

Other papers on waterway transportation, besides those of Mr. Kutz and Mr. Alfred were prepared and read by H. B. Luther, professor of civil engineering, University of Cincinnati, Cincinnati, Ohio, and Julian A. Pollak, vice-president, Pollak Steel Company, Cincinnati, Ohio. Abstracts of the papers read by Mr. Kutz and Mr. Alfred follow:

Cheapness Justifies Waterway Transportation

By C. W. Kutz

Colonel, Corps of Engineers, U. S. Army, Division Engineer, Central Division

The Ohio river extends from the confluence of the Allegheny and the Monongahela rivers at Pittsburgh, to the Mississippi river at Cairo, a distance of 968 miles. Its width varies from less than 900 ft. to nearly 6,000 ft. and its slope from $11\frac{1}{2}$ in. per mile in the upper reach, to 3 in. per mile near the mouth.

Table II shows the first cost of the existing river improvement projects in the Ohio basin and the cost of operation and maintenance. In the case of the Ohio the amount given is 80 per cent actual cost and 20 per cent estimated. On the Monongahela the cost includes the estimated cost of Locks and Dams Nos. 8 and 9, now under construction, to replace old Locks and Dams Nos. 7, 8 and 9. In other cases the cost is the historical cost as shown by the annual reports of the Chief of Engineers.

The cost of operation and maintenance are made up in a similar manner.

In Column 4 is shown the cost per mile and in Column 5, interest on the first cost at 4 per cent. Column 7 shows the total fixed charges and the final column the fixed charges per mile.

The Ohio river system is primarily a coal carrier and in the small percentage of other freight resembles some of the principal coal carrying railroads.

The great decrease in tonnage on the Ohio notwithstanding the improved navigation facilities is in large measure due to a change in the place of marketing the

coal mined in the river mines of the Monongahela valley.

There is a considerable movement of coal from the West Virginia coal fields through Cincinnati to points in Indiana. Some of this coal comes in by rail and is turned over to another railroad for delivery to destination. Another part comes in by river, is transferred to cars and delivered to the same railroad for delivery to the same destination but the rates charged on the coal coming in by rail are lower than the rates charged on the coal coming in by river, other conditions being identical. This differential in favor of the all-rail movement to Indianapolis is now $18\frac{1}{2}$ cents a ton and several years ago was considerably higher.

The results of investigation seem to justify the general statement that in the movement of coal and structural steel in the Ohio river basin, the existing rail rate structure does not discriminate between points having water competition and points that are without water competition.

Cost of Transportation by Water

In determining the economic advisability of creating an inland waterway or in measuring its usefulness as a part of the country's general transportation system, one of the most important factors and one concerning which available information is limited, is the cost of water haulage; that is, the cost of transportation by water exclusive of fixed charges. This cost is subject to the com-

TABLE II.—OHIO RIVER AND THE CANALIZED PARTS OF ITS PRINCIPAL TRIBUTARIES

1	Length Miles 2	Cost 3	Cost per mile 4	Int. on first cost 4 per cent 5	Cost-operation & maintenance Av. 5 years 6	Fixed charges 5-6 7	Fixed charges per mile 8
Ohio	986	\$103,000,000	\$106,350	\$4,120,000	\$2,000,000	\$6,120,000	\$6,320
Allegheny	24	1,446,000	60,200	57,840	136,080	193,920	8,075
Monongahela	131	13,612,000	103,900	544,480	1,185,500	1,729,980	13,200
Muskingum	91	1,452,595	15,963	58,104	76,670	144,774	1,591
Little Kanawha	48	282,000	5,800	11,280	29,857	41,137	857
Kanawha	88	3,580,000	40,700	143,200	166,160	309,360	3,515
Big Sandy	55	1,512,000	26,500	60,480	34,707	95,187	1,731
Kentucky	260	4,266,000	16,400	170,640	234,541	405,181	1,558
Green	217	670,428	3,100	26,817	102,770	129,587	597
Cumberland, from mouth to Lock & Dam No. 9.	333	7,174,000	21,544	286,960	105,036	391,996	1,177
Tennessee below Florence	256	5,166,000	20,180	206,640	45,000	251,640	983

bined influence of many factors, among which may be listed:

(a) The physical characteristics of the waterway, of which in canalized rivers the more important are the size of the locks and the depth and width of the intervening pools.

(b) Types of transportation service, which may be grouped as private industrial, contract industrial and common carrier.

(c) The kind of freight. In the comparisons to follow bulk freight only will be considered and in some cases coal alone.

(d) Type of floating plant. As more than 98 per cent of the tonnage on the Ohio and its tributaries is carried on barges, open or decked, no consideration will be given to a movement of freight on packet boats or other self-propelled carriers.

(e) Annual volume of tonnage. The volume of tonnage handled annually by a given operating agency affects the number of barges required per towboat, and the plant performance.

(f) Back haul. Very little freight is available as back haul that can be carried on barges used for the transportation of coal, sand and gravel. Where back haul traffic is available, the costs of transportation are from 60 to 65 per cent of those without back haul.

(g) Length of haul. This factor influences the investment per ton mile and the plant performance.

(h) Co-ordination of terminal and transportation services. This factor gives private industrial operation an

joint hauls—part river and part rail—a transfer charge of about 10 cents a ton and a breakage loss must both be absorbed.

Economic Comparisons

If the points of origin and destination and the ton mileage of each commodity hauled on these rivers are known as well as the water haulage costs, the direct benefits or savings resulting from their use can be readily ascertained by comparison with existing rail rates and their economic justification determined by comparing the savings or benefits with the fixed charges.

While neither the traffic data nor the water haulage cost data are sufficiently comprehensive for a complete comparison, approximate results can be secured by limiting the comparison to coal and assuming that the ton mile savings on that commodity represent the average savings on the total ton mileage.

The average cost of moving coal on the Monongahela river is quite well determined and amounts to three mills per ton mile, and the rail rate on coal on parallel roads for the same average haul, 42 miles, is 19 mills per ton mile, the rail and water distances being practically equal in this case. This difference applied to the total ton mileage, 919,000,000, reported for 1924, shows a gross annual saving of \$14,700,000 or allowing for difference in terminal costs a net annual saving of \$12,700,000, in comparison with fixed charges of \$1,729,980.

A similar comparison on the Ohio is limited to the reach between Pittsburgh and Cincinnati, 483 miles in length.

1924						
River	Cost	Tonnage	Ton miles	Average haul miles	Fixed charges	Fixed charges mills per ton mile
Ohio	103,000,000	8,446,322	978,421,930	116.0	6,120,000	6.25
Allegheny	1,446,000	4,339,511	35,370,300	8.15	193,920	5.5
Monongahela	13,612,000	21,878,815	919,564,942	42.0	1,729,980	1.88
Muskingum	1,452,595	152,012	9,120,720	60.0	144,774	16.1
Little Kanawha	282,000	45,951	1,378,530	30.0	41,137	29.7
Kanawha	3,580,000	901,183	54,064,140	60.0	309,360	5.7
Big Sandy	1,512,000	29,497	459,786	15.0	95,187	211.0
Kentucky	4,266,000	195,372	40,521,667	208.0	405,181	10.0
Green	670,428	436,916	15,949,200	41.0	391,996	26.5
Cumberland	7,174,000	390,706	59,202,500	47.0	251,640	4.25
Tennessee (below Florence)	5,166,000	1,255,436				
Total*	141,490,595	37,634,805	2,114,044,709	56.2	9,683,175	4.6

*Not including Green river.		
	Six Coal Roads	Ohio River System
Investment per annual ton (not including equipment)	\$3.50	\$3.75
Investment per annual ton mile	0.016	0.0675
Fixed charges per ton mile	0.002	0.0046

advantage over contract industrial or common carrier and results in lower costs.

Another difference that must be taken into consideration in any economic comparison is the difference in terminal costs. Experience on the Monongahela river indicates that it is somewhat cheaper to load into cars than into barges. On the Ohio the difference is greater due to the greater range between normal and high water stages. Coal cars can be unloaded from a trestle or elevated and tipped bodily, while coal barges must be unloaded by a grab bucket. With modern unloading plants of large capacity this difference amounts to less than 5 cents a ton.

Every transfer of bituminous coal, whether loading or unloading, involves some loss due to breakage and, as this breakage is generally proportional to the drop, loading into barges has been considered as involving greater loss than loading into cars. To minimize this loss, three modern plants in Huntington, W. Va., for transferring coal from rail to barge are in the form of inclined belt conveyors.

For joint hauls involving two railroads, cars can be switched from one to the other at small cost, while in

There are only three uncompleted dams above Cincinnati and as they will be completed this year, the cost of that part of the project and the cost of operation and maintenance can be closely approximated.

With a first cost of \$54,500,000, interest at 4 per cent, and operation and maintenance cost of \$1,500,000, the fixed charges will be \$3,680,000.

The coal moving on the Upper Ohio may be divided into three groups:

(a) That coming out of the Monongahela river and moving to points in the industrial district between Pittsburgh and Wheeling; (b) that coming out of the Kanawha; and (c) that coming into Huntington, W. Va., by rail and transferred to barge.

Part of the (b) and (c) movements are to the industrial district at Ashland and Ironton but the major part comes to Cincinnati. Some of the latter coal is reshipped by rail, involving a rail-river-rail movement, the coal being hauled from Guyan Valley by rail 70 miles, transferred to river barges, hauled by water to Cincinnati, 162 miles, and reshipped by rail to points in Indiana.

The computation of direct benefits on the Upper Ohio

is not as simple as on the Monongahela but a study of the major movements and a comparison with rail rates and distances indicates a weighted average saving of 4.0 mills per ton mile. If this be applied to the total ton mileage—800,000,000 reported for this part of the Ohio in 1924—the gross savings amount to \$3,200,000 or, allowing for difference in terminal costs, an estimated net saving of \$2,200,000.

This is approximately 60 per cent of the fixed charges. As this part of the project is not yet completed, and still in the development stage, a characteristic of every large transportation enterprise, the showing is regarded as promising of ultimate economic success.

Similar comparisons made on other tributaries show some as yielding benefits comparable with the fixed charges, others have not yet reached the stage of economic justification, while still others have apparently passed beyond it, as did the old canals constructed 100 years ago.

Certain data concerning the Ohio River System as a whole are shown in the table on the opposite page.

The fixed charge per ton mile for the entire system is 4.6 mills, 2.3 times the fixed charge per ton mile on the principal coal carrying railroads in this region. If upon completion of the Ohio Canalization Project the commerce is doubled, as seems probable, the fixed charge per ton mile will be quite comparable with that on coal carrying railroads.

By some it is held that inland waterway improvements are justified even though the benefits are less than the

carrying charges but the National Waterways Commission in its report to Congress, a number of years ago, stated:

"The cost of facilities for carrying freight, whether borne by the federal government or by private capital is a burden upon the resources of the country. The fundamental criterion should be whether a railway or a waterway, when constructed or improved, will be a profitable investment of capital."

The same view was expressed recently by General Black in his paper, "Waterway and Railway Equivalents," as follows:

"New waterway lines of transportation should not be established unless an analysis of the existing railway, highway, and waterway lines and of the need for transportation shows that the proposed new line is required and that if established it will produce an annual saving in the cost of transportation greater than the interest on construction plus maintenance and operating costs."

The writer would phrase a similar thought by saying that the people of the United States are entitled to have the products of the farm, mine, and factory move from origin to destination by the cheapest means, all elements of cost considered. Every inland waterway project should be gaged on that basis. Projects that are economically sound should be prosecuted vigorously and their use encouraged by wise regulation of rates and by the establishment of joint rail and water rates so as to make them an integral part of the country's transportation system.

Waterway Transportation Uneconomic

By Frank H. Alfred

President and General Manager, Pere Marquette

I shall not attempt a comparison of Ohio river traffic with all classes of transportation in the United States, as this would include not only other water-borne traffic but also that carried on the highways, but will confine myself to a comparison with the freight traffic carried by the railroads. This is shown in the following statement for 1923, the last year in which statistics as to river traffic are available:

	Ohio river	Railroads in U. S.	Per cent river of railroad
Length in miles.....	968.5	250,183	0.39
Tons of freight.....	8,280,520	2,333,000,000	0.35
Tons freight per mile of length.....	8,550	9,065	94.3
Ton miles.....	749,120,486	416,211,000,000	0.18
Ton miles per mile of length.....	773,485	1,663,226	46.5
Cost, including equipment.....		\$22,681,000,000	.....
Cost per mile including equipment.....		\$90,658	.....
Estimated cost of improvement.....	\$110,716,177		.....
Est. cost per mile of improvement.....	114,318		.....

In this comparison it should be noted that the cost of railroads includes rolling stock, which amounts to about one-third of the total; whereas the cost for the river does not include boats and barges, nor does it include anything to correspond to shops, fuel and water stations, freight and passenger stations, or terminal facilities in general, which form so large a part of the cost of a railroad. It is really equivalent to the cost of the roadway only, which in the case of the Pere Marquette, amounts to only about one-third of the total.

In 1923 the railways carried one ton of freight one mile for an average revenue of 1.116 cents.

Cost of River Transport

Data are not available for arriving at corresponding figures for Ohio river traffic with accuracy. However, the uncertain factors are not the important ones, so that a

total may be reached which is fairly comparable with the total for railroads.

The improvement project will probably be completed within the next three or four years at a cost now estimated at \$110,000,000, on which interest at 4 per cent would be \$4,400,000. The maintenance in 1923 with 37 dams in operation, cost \$1,420,574, so it may be assumed that the cost of maintenance of the completed project will average \$2,000,000 per year.

Depreciation on the railroads is included in their maintenance cost, but is not included in the above figure for the river. Charles Whiting Baker, in an article on "Traffic on the Ohio River" in Engineering News-Record of January 15, 1920, says—"The first dams built on the Ohio river already require reconstruction. A depreciation charge of 1½ per cent allows at least as long a life for these works as can safely be assumed." This rate gives a yearly depreciation charge of \$1,650,000.

The government, by making this expenditure, will have withdrawn \$110,000,000 from the taxable wealth of the nation, on which it would otherwise be receiving taxes. A fair comparison with railroad costs should therefore include taxes on this amount. The railroads paid taxes in 1923 of \$332,000,000 on an investment of \$22,681,000,000, or at the rate of 1.46 per cent, which applied to the cost of \$110,000,000 is \$1,606,000.

The total annual charge against the improvement is summed up as follows:

Interest at 4 per cent.....	\$4,400,000
Depreciation at 1½ per cent.....	1,650,000
Taxes 1.46 per cent.....	1,606,000
Maintenance	2,000,000
	<hr/>
	\$9,656,000

This amounts to a cost of 1.29 cents per ton mile, based on volume of traffic of 1923. As the volume of traffic decreases, this cost will increase.

This does not include the amount paid the carriers for actually moving the freight. These figures are not available. H. G. Moulton, in "Waterways versus Railways," published in 1912, estimated that a rate of 0.089 cents per ton mile would be necessary to enable a carrier to haul coal from Pittsburgh to Cairo at a profit of 5 per cent on its investment. While coal forms by far the greater bulk of the tonnage, there is enough other material handled at a much higher rate to raise the average rate level. Further, this rate assumes a through movement from Pittsburgh to Cincinnati; but the average haul on all traffic is only 90 miles, with correspondingly greater terminal delays. These two factors would result in at least doubling the above rate, and the increased cost of labor, fuel, etc., since the above estimate was made would make it necessary to add about 60 per cent more to adjust to present day costs. These adjustments bring Mr. Moulton's estimate up to approximately 0.27 cents per ton mile, or about one-fourth of the rail rate. Of course, rates on most commodities are much higher for there is little competition by water, and rates are based largely on railroad competition.

Waterway Rates

River carriers no longer make the rates, but instead they adjust their rates to a little below the schedule of the railroads, which is based on the experience of all the railroads of the United States and must stand the test of study by the Interstate Commerce Commission, a fact finding body. This new condition has come about through the shifting of traffic from water to railroad, and the attendant specialization of traffic on the river.

The average rate is kept down by the relatively large tonnage of coal; but making all due allowance for this, it is not probable that the average cost is less than 0.27 cents per ton mile, if interest, taxes, depreciation and maintenance on the floating equipment, in addition to the actual cost of operation, are properly taken into account.

Adding the cost of operation, 0.27 cents, to the ton-mile charge for improvements, gives a total ton mile cost of 1.56 cents 40 per cent greater than the rail rate. Even this figure is not comparable to the railroad cost per ton mile, as a ton-mile by river is not the equivalent of a ton-mile by rail. All towns of any considerable size on the river are also accessible by rail. The following table shows a comparison of distances by water and the shortest rail routes.

	Rail	River	Ratio river to rail
Pittsburgh to Wheeling	68	90	1.32
" " Cincinnati	326	468	1.42
" " Louisville	455	604	1.33
" " Evansville	509	784	1.54
" " Cairo	670	968	1.45
	2,028	2,914	1.44

To get a fair comparison of rail and river cost it is therefore necessary to multiply the river cost by 1.44, resulting in a cost of 2.24 cents per ton mile by river, as against 1.116 by rail, or just twice as much. There are two other features which if taken into account would further modify this comparison to the advantage of the railroads. Coal, sand and gravel make up 90 per cent of the river traffic, which is more than twice the proportion on the railroads. Railroad rates on these commodities are considerably lower than the average, and if such rates were used in this comparison instead of the average, it would result in a still more unfavorable showing for the river. Further, the rail rate of 1.116 cent per ton mile covers revenue freight only. The traffic figures on the Ohio, as compiled by the U. S. Engineers, may also in-

clude only revenue freight, but it is more probable that they include all freight moved on the river, including fuel for steamboats and materials used in constructing the river improvements. If this is the case, a cost per ton mile for river traffic, based only on revenue tonnage, would be appreciably higher. To sum it all up we may say conservatively that river transportation costs at least twice what railway transportation costs.

In addition to costing twice as much, river traffic is subject to other disadvantages. It is a slow movement down stream and much slower up-stream. It is subject to interruption from the periodic floods, and even ice, in certain periods.

River transportation is not comparable with railroad transportation as to service, inasmuch as it is limited as to point of loading and unloading. In the case of the railroads, the service is not thus restricted; and to this is no doubt due the development of the railroads in the river territory to the disadvantage of water borne transportation.

The above comparison shows that as a transportation facility, the Ohio river may be likened to a very crooked railroad of similar length with less than one-half the average traffic density; with a very badly balanced traffic, but with grades favorable to the heavier movement; with a roadbed which cost more than three times that of the average railroad; and operating at a total cost per ton mile at least twice that of the average railroad. Fortunately for the shipper on this route he does not have to pay interest, taxes, depreciation or upkeep on its roadway; for this expense is borne by the whole United States.

Waterways Advantages over Railways

Waterways have always been favored as to railroad rates for the reason that the original rate structure was based on the existing traffic and competition. This has often resulted in lower rates to towns along the rivers. Colonel Burr in his discussion of General Black's admirable paper on "Waterway and Railway Equivalents," states, "the waterways, however, have justified the public's confidence and willingness to spend its money on them although they may carry little actual commerce. To use a naval phrase, they have the value of a 'fleet in being.'" This may have been true at one time, but Colonel Burr has evidently forgotten the Transportation Act of 1920. This Act establishes a fair return for the railways, and authorizes the Interstate Commerce Commission to so adjust rates that they will earn such a return. This being the case, it is evident that if any community or set of communities enjoys rates lower than they would pay in the usual run of affairs, this deficiency must be made up by other communities which pay a higher rate. Colonel Burr's "fleet in being," in this instance the improvement of the Ohio river, serves only to protect those who dwell along the banks of the river in an advantage secured at the expense of other communities. The shipper and consumer in Columbus, Dayton and Indianapolis not only help pay for these improvements, but if the improvements fulfill their purpose and stimulate river traffic, the shipper and consumer at inland points will also pay a higher rate on account of them.

We are now in the midst of agitation for the "Lakes to Ocean" waterway. It is to be hoped that a decision in regard to this gigantic project will only be reached after it has been most carefully considered in all its engineering and economic aspects and that such a decision shall be made on the basis of the findings of the most expert investigators and not in response to an ill-informed and more or less hysterical popular enthusiasm, as has too frequently been the case in the past.

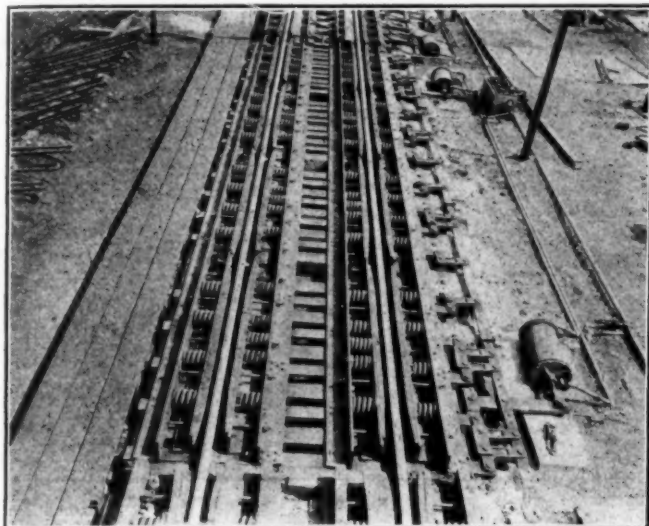
Car Retarders in Hump Yard Effective in Winter

Total of \$12,623 saved in February by use of automatic equipment instead of riders at Gibson, Ind.

THE car retarder system installed for the automatic control of cars from the hump in the freight classification yard of the Indiana Harbor Belt at Gibson, Ind., was used successfully throughout the past winter and effected a decided saving in the cost of operating the yard as compared with the costs during previous

years when car riders were employed. The principles of construction and operation of this car retarder system, which was developed under the direction of George Hannauer, vice-president of the Indiana Harbor Belt, were described in detail in the *Railway Age* for November 15, 1924, page 895. Since that time certain improvements have been made in the car retarders and the hand-throw track switches have been converted to electro-pneumatic operation with control from towers for the purpose of eliminating switch tenders.

During the periods of peak service in previous years, it has been necessary to use the Burnham yard as an overflow for the switching of Baltimore & Ohio trains and some of the New York Central trains that could not be handled at the Gibson yard. During the season just past it was found that all of the traffic offered could be handled at the Gibson yard, with the result that a portion of the Burnham yard was leased for other purposes. The l.c.l. freight formerly switched at Gibson Transfer, and also considerable switching that was previously handled at the Michigan Avenue yard, is now being handled at the



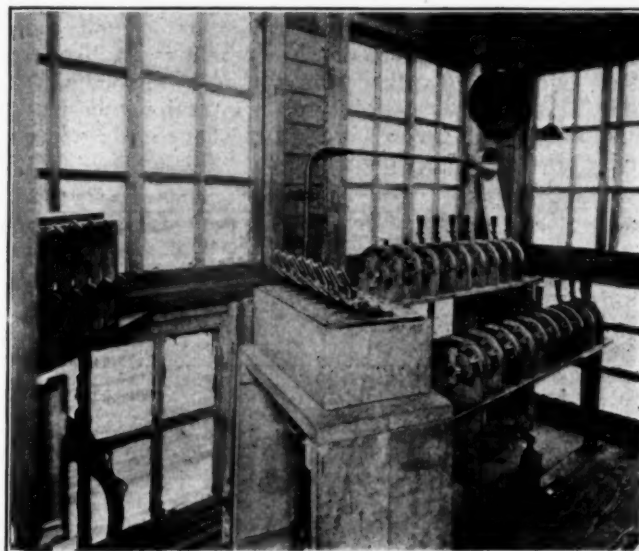
The Retarder Set on the Main Hump Head Is of the Latest Design

years when car riders were employed. The principles of construction and operation of this car retarder system, which was developed under the direction of George Hannauer, vice-president of the Indiana Harbor Belt, were described in detail in the *Railway Age* for November 15, 1924, page 895. Since that time certain improvements have been made in the car retarders and the hand-throw track switches have been converted to electro-pneumatic operation with control from towers for the purpose of eliminating switch tenders.

Retarder System for Peak Traffic

The important problem in the operation of a classification yard is the development of full capacity during periods of maximum demand. The peak traffic in the Gibson yard ordinarily occurs in the autumn and winter, after the close of navigation on the lakes, and in the past when the yard was operated with car riders, its capacity in the winter was often seriously limited by a shortage of men, the necessity for training new men under heavy traffic conditions, and the general inefficiency of men during extremely cold weather.

As the number of riders could not be adjusted within an eight-hour period, any unusual increase in the number of cars to be classified during the day resulted in congestion because the number of cars that could be handled would be limited by the number of riders on the job. The car retarder system has, therefore, proved to be an im-



Interior of Typical Retarder Operator Tower, Showing Levers for Control of Skate Machines at Left, Levers on the Box to Control Switches and Two Groups of Levers at the Right for Controlling Retarders

Gibson yard at a lower operating cost. The car retarder system has thus definitely increased the capacity of the Gibson yard and has decreased the cost of switching traffic formerly handled at these other yards.

Operation Under Winter Conditions Successful

The installation of car retarders for the entire west-bound hump yard at Gibson was completed December 1, 1924, at which time all car riders were eliminated. It was found by experiment that each retarder operator had ample time to throw the switches in the zone assigned to him. This resulted in a decision to install pneumatically operated switch machines to be controlled electrically by

the car retarder operators. This installation was completed early in January, and made it possible to eliminate the five switch tenders employed in each shift.

A portion of the winter of 1924-1925 was extremely cold so the car retarder system was given a test that is believed to be representative of its efficiency during winter weather. The temperature was as low as 20 deg. below zero, with several snowfalls, one of which exceeded six inches. Two severe sleet storms occurred which covered the ground, tracks and equipment with a thick coat of ice. The sleet was so heavy that it was necessary to use mauls to break the ice on the drawbars in order to uncouple the cars at the crest of a hump. These sleet storms did not interfere with the successful operation of the car retarding system, because the operating mechanism is provided with a surplus of power, and the machines are operated with sufficient frequency to prevent any great amount of ice forming on the working parts. A few of the machines were equipped with steam pipes to melt snow. It was found, however, that the snow could be blown away so easily by compressed air that the installation of the steam equipment was not justified in this climate.

The capacity of the yard developed under the adverse weather conditions exceeded any previous record with hump riders under similar conditions. Obviously the operating speed of a humped car was affected by the cold and the winds to the same degree as in previous years, but aside from this factor, the weather did not decrease the yard capacity.

February was the first month in which the yard was in full operation without hump riders or ground switch tenders, and the results of the operations in February, 1925, as compared with February, 1924, are shown in the table. As February, 1925, was a typical winter month, these figures will give a fair idea of what may be expected under normal winter conditions.

Item	Quantities		Costs	
	Feb., 1924 (29 days)	Feb., 1925 (28 days)	Feb., 1924	Feb., 1925
1. Cars humped	42,534	45,283	.....	.....
2. Average per day	1,467	1,617	.....	.....
3. Mean temperature	30 deg.	30 deg.	.....	.....
4. Engine hours	1,840	1,338	\$19,320.00	\$14,...
5. Conductor hours	696	648	577.68	5 ..
6. Switchmen hours (includes car riders)	14,192	2,787	10,927.84	2,145.99
7. Switchtender hours	3,480	.....	2,053.20	.....
8. Hand-brake testers	58	.....	400.00	.....
9. Retarder operator hours .....	.....	3,360	.....	3,124.80
10. Messenger service hours .....	.....	270	.....	122.50
11. Maintenance .....	.....	.....	.....	1,758.05
12. Power .....	.....	.....	.....	1,124.73
13. Personal injuries .....	.....	.....	2,263.00	55.25
Grand total .....	.....	.....	\$35,541.72	\$22,918.16
Average cost per car humped .....	.....	.....	83.5c	50.6c
Total saving, February, 1925, over 1924 ..	.....	.....	.....	\$12,623.56

Savings Not Included in the Above:

14. Saving in cleaning yard.
15. Reduced car damage.
16. Reduced freight damage.
17. Increased humping capacity.

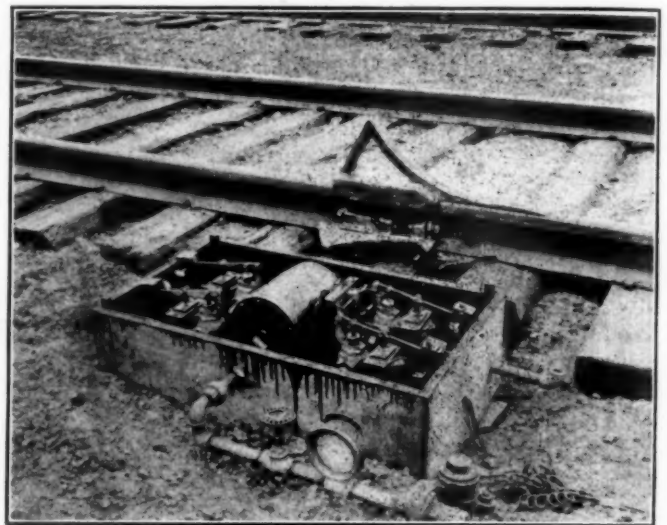
Explanation of Savings

A study of the cost of enginemen's and firemen's wages, coal, water, cost of engine repairs and roundhouse service, and interest on investment, led to the conclusion that \$10.50 per hour was the average cost per engine hour for pusher service. An average of 150 more cars were handled per day in February, 1925, than in a day of the corresponding month of the previous year. However, as shown in the table, there was a reduction of 502 engine hours in February, 1925, as compared with February, 1924. This difference represents a saving of \$5,171, and is ascribed to the flexibility afforded by the retarder system.

One factor contributing to this result is that the yard was able to switch the cars without any delay incurred in waiting for riders to return to the hump. Another ad-

vantage is that the car retarders space the car cuts more accurately, greatly reducing the chances of a car being put in the wrong track as was frequently the case under manual operation where an insufficient space between two cuts did not allow the switch to be thrown. Trimming is expedited with the zoning system under which the car retarder operators control the switches in their respective zones. At certain intervals different sections of the yard can be trimmed without seriously slowing up the flow of cars down the leads. All of these factors have effected a more uninterrupted operation of the yard and a saving in engine hours.

Previously, with the use of car riders it was necessary to inspect the hand brakes in a receiving yard, and as hand brakes are not required with the car retarder system this inspection is no longer necessary. The item, messenger service hours, covers the charge for a messenger now required to deliver train lists to the various retarder operators. However, this expense is temporary,



Skate-Placer Machine with Cover Removed, Showing Skate in Place on Rail and Holder Returned to Normal Position

inasmuch as a pneumatic tube system is being installed to perform this delivery service.

Included in Item 11, maintenance payroll and maintenance materials, is the cost of handling snow and the cost of some service tests with the retarder shoes. Upon the completion of this experimental work it is expected that the average maintenance will eventually amount to about half of the cost shown. Item 12, power, includes the labor charge for the operation and maintenance of air compressors, the cost of power for operating a system, and the cost of blowing snow out of the switches. By assigning other duties to the compressor attendants it is expected that this cost will be reduced by \$220 per month.

Other Substantial Savings Not Considered

The car retarder system is responsible for other substantial savings which cannot be figured accurately. The elimination of severe impact has reduced the spilling of freight such as coal from the cars, thereby reducing the amount of section labor and work train service necessary to clean the yard and pick up freight. The reduction of the impact between cars has substantially reduced the damage to cars and lading, but the damage records are not kept in a way that permits of a segregation of the damages occurring in hump yards. It is estimated that losses on this score have been reduced two-thirds. When the installation of the new type of "skate" machine is completed damages from impact will be further reduced.

Damages resulting from personal injury to the car riders and switch tenders was formerly a serious factor in yard operation. During winter weather when the cars and the ground were covered with snow or sleet serious personal injuries were a common occurrence, and the table shows that damages on this account averaged \$2,263 per month for the year ending March 31, 1924. Accidents of this nature were practically eliminated by the installation of the car retarders and automatic skate machines.

During the winter representatives of other roads have watched the operation of the car retarders at Gibson yard and as a result one road, the Illinois Central, has contracted for the installation of car retarders in its new Markham (Chicago) yard and its East St. Louis yard.

Freight Car Loading

WASHINGTON, D. C.

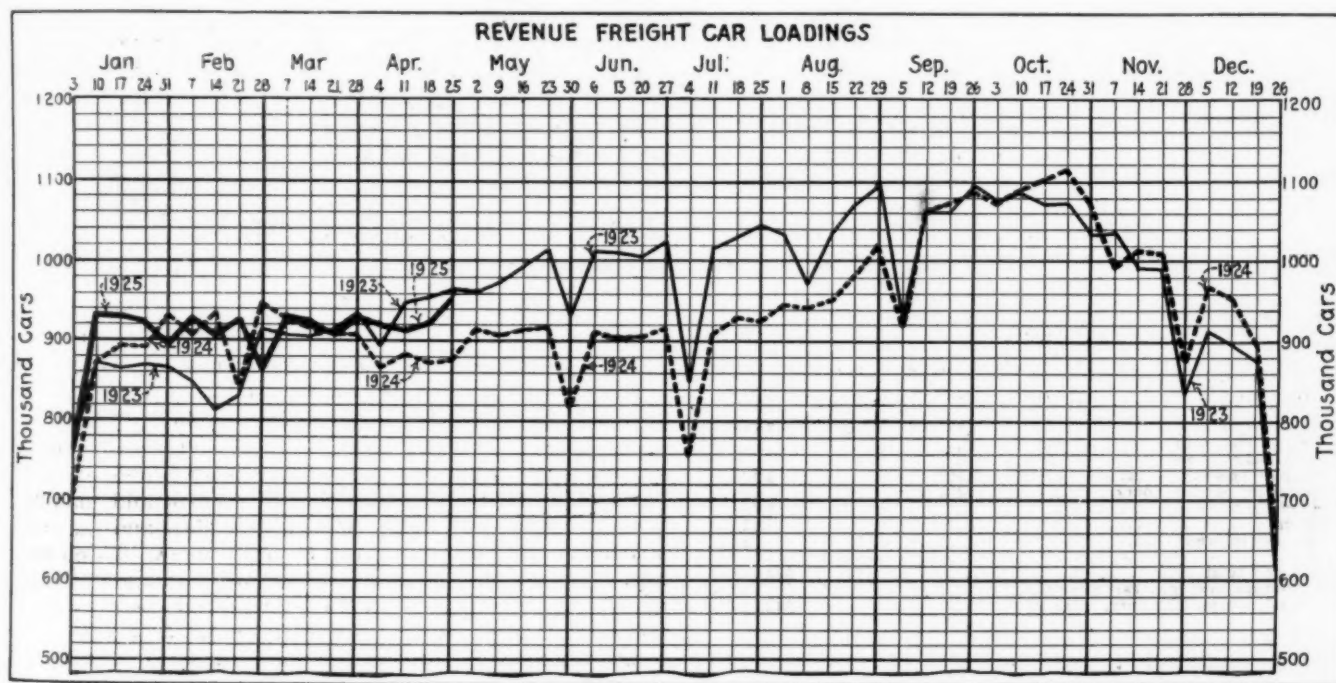
FREIGHT car loading showed a marked increase in the week ended April 25, when the total was 959,225 cars, an increase of over 36,000 cars as compared with the previous week and of 80,838 cars as compared with the corresponding week of last year, although there was still a decrease of 3,353 cars as compared with 1923, when the Spring increase in traffic

REVENUE FREIGHT CAR LOADING
Week Ended Saturday, April 25, 1925

Districts	1925	1924	1923
Eastern	226,767	208,347	246,163
Allegheny	197,034	179,164	216,031
Pocahontas	45,426	37,330	39,071
Southern	149,528	132,179	139,492
Northwestern	142,071	124,766	122,260
Central Western	132,787	134,349	141,473
Southwestern	65,612	62,250	58,059
Total Western	340,470	321,367	321,821
Commodities			
Grain and grain products	34,026	37,845	36,894
Live stock	31,128	32,600	31,565
Coal	147,330	117,572	179,413
Coke	10,607	10,237	15,576
Forest products	77,434	77,120	77,446
Ore	42,494	27,417	24,159
Mdse., l. c. l.	255,099	247,887	241,538
Miscellaneous	361,107	327,709	355,987
Total	959,225	878,387	962,578
April 18	922,778	876,916	958,042
April 11	917,284	880,937	947,271
April 4	922,375	861,990	896,375
March 28	931,395	907,389	936,274
Cumulative total, seventeen weeks	15,486,897	15,086,241	15,081,006

Car Loading in Canada

Revenue car loadings in Canada in the week ended April 25 showed a slight increase over the previous week, gains having been made in lumber, ore and miscellaneous freight. Grain loadings continued lighter than last year, especially in the Western division, and coal was much lighter in the Eastern division, due principally to labor troubles. Merchandise loading was heavier than for the



started somewhat earlier. Increases as compared with last year were shown in all districts except the Central Western and in all classes of commodities except grain and grain products and livestock. Coal loading amounted to 147,330 cars, an increase as compared with last year of 29,758 cars, and miscellaneous loading amounted to 361,107 cars, an increase of 33,398 cars. Ore loading also increased by 15,077 cars. As compared with 1923 the only increases were in the loading of ore, merchandise and miscellaneous. The summary, as compiled by the Car Service Division of the American Railway Association, appears at the top of the next column.

The freight car surplus for the week ended April 22 averaged 344,198 cars, including 173,455 coal cars and 126,031 box cars. The Canadian roads had a surplus of 29,525 cars, including 26,375 box cars and no coal cars.

same week last year by 810 cars and miscellaneous freight by 805 cars.

Commodities	Total for Canada			Cumulative totals to date	
	Apr. 25, 1925	Apr. 18, 1925	Apr. 26, 1924	1925	1924
Grain and grain products	5,771	5,781	7,357	106,684	129,886
Live stock	2,098	2,183	2,320	38,120	36,751
Coal	1,949	2,018	5,302	77,140	84,127
Coke	271	216	243	5,144	4,219
Lumber	3,938	3,459	3,480	51,740	57,880
Pulpwood	1,997	2,114	2,058	62,153	63,762
Pulp and paper	2,128	2,091	1,868	35,884	35,992
Other forest products	1,974	2,467	2,844	52,299	51,903
Ore	1,515	1,175	1,142	19,992	16,868
Merchandise L.C.L.	16,372	16,505	15,562	244,345	224,875
Miscellaneous	11,992	11,846	11,187	174,673	178,679
Total cars loaded	50,005	49,855	53,363	868,174	884,942
Total cars received from connections	33,107	32,293	30,970	564,943	586,844



A Section of the Central Lumber Yard at Pocatello, Idaho

Union Pacific Centralizes Control of Stores Operations

Eighteen million dollar cut in stocks among results effected in supply department

[This is the first of a series of three articles on the purchasing and stores organization of this road, the second and third of which will follow in early issues.—EDITOR.]

ON May 31, 1921, the Union Pacific System found itself possessed with supplies and materials costing \$38,649,115, or nearly \$4,000 of stock for every mile of line. This was excessive for the Union Pacific. It required no conjuring to explain its origin. The road had only recently emerged from the war and federal control. That period was one of a continually rising market as regards prices. Likewise it was a period of slow and uncertain deliveries and, in many instances, the purchasing officers faced conditions when it might be, or actually was, impossible to secure needed material. Moreover, the consumption was to some extent erratic and uncertain and neither the time nor the conditions promoted that degree of co-ordination between units essential before one unit could be expected to place much reliance upon the others in the event of emergencies.

Under these circumstances the inevitable occurred. Storekeepers ordered on large margins and purchasing agents bought accordingly. Then the war ended and, subsequently, federal control. But the conditions did not change for the better, with the result that on May 1, 1921, material in stock was excessive. The problem that confronted the management was one of relieving itself quickly of this large investment.

The outcome was an achievement in railway cost cutting. By October, 1922, instead of \$38,649,000, the investment was reduced to \$20,800,000, a reduction of

\$17,800,000 in the short space of 18 months. The magnitude of the problem faced at the outset and the success attained in meeting it are shown in the table where the comparative figures are given for each class of stock.

As will be seen from the table the initial investment of \$38,649,000 and the ultimate reduction of \$17,869,000 includes supplies and material which fall in part outside the jurisdiction of the stores department, notably, coal, structural steel, cross-ties, rail and rail fastenings, leaving an initial balance for the consideration of this department of \$21,750,000, which was reduced by \$11,800,000, or more than 50 per cent, within 18 months. Neither can it be said that this reduction was effected by the stores department alone, for the story of the reduction is one of many aspects. But so predominantly were developments in the stores department involved in this reduction and so vitally involved with the entire reduction were events which transpired in the combined purchasing and stores field as to bind each inseparably with the other for all practical purposes of discussion. The business of reducing the total investment, in short, was the business of the supply department.

A System Organization Formed

The first and most far-reaching step in this direction was to centralize activities. This was advised because of the independent character of the various units involved in the supply organization. Fundamentally, the Union Pacific is not a single property. It is composed of several properties—the Union Pacific comprising 3,717 miles of line east of Ogden, Utah; the Los Angeles & Salt Lake,

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through the Portland gateway, Portland, Ore., was made the site of the first of these storage yards. Under the new arrangement this yard supplies all that lumber from this section required for bridge and building construction and for car department work on the Oregon-Washington Railroad & Navigation Company's lines and on the Oregon Short Line as far east as Pocatello, Idaho. The second storage point is at Pocatello, Idaho, which carries all of this class of lumber required on the Oregon Short Line east of Pocatello; also for the entire lines of the Los Angeles & Salt Lake and for the Union Pacific as far east as Cheyenne, Wyo. The third storage yard is situated at Cheyenne, Wyo., where all forest products are stored for the lines of the Union Pacific from Cheyenne east to Omaha, Neb., and to Kansas City, Mo. In this way all back hauling of lumber from the west is avoided and the entire movement is in the direction of use. Like-

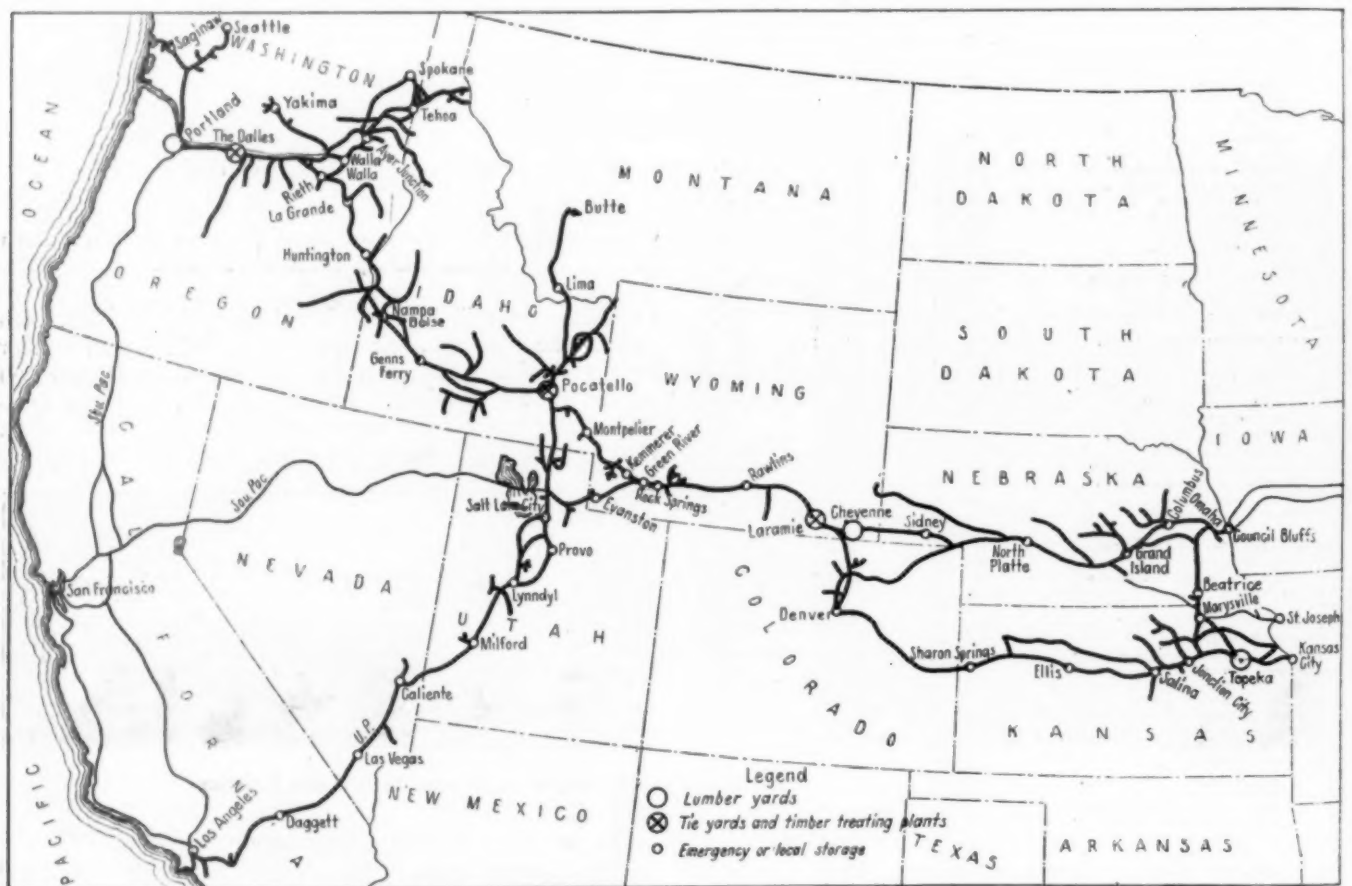
stock is picked up for general service and a new supply substituted in its place, thus preventing deterioration and assuring the presence of a workable stock at all times.

With this modification the new plan has not only met expectations from the stock control and shipping standpoints, but the large storage available permits the purchasing of lumber under the most favorable market conditions. That the plan has been effective is indicated by the fact that a reduction of \$1,206,000, or more than 50 per cent, was made in the investment in timber within the first 18 months after the plan was introduced.

Tie Yards and Preserving Plants

Also Strategically Located

Minimum haul was also a dominating factor in solving the cross-tie problem. The Union Pacific System consumes about 3,500,000 ties a year on the average. Previous



Map of the Union Pacific System, Showing the Location of Storage Points for Forest Products

wise, since all of the oak for the system is received from southern territory through the Kansas City gateway and since neither the volume nor use of this material requires its extensive distribution, a single storage yard was provided for the entire system at Topeka, Kan., thus again confining the movement of lumber to a one-way haul.

The only modification in this scheme of handling lumber is that necessary to meet the need of carrying small emergency stocks of bridge materials at certain points for use on account of washouts, fires and other emergencies. To control such investment and have material on hand, a plan has been developed by which a definite bill of material has been prepared for each location and only that quantity of material is stored that is called for under these specifications. Furthermore, when the timber is unloaded, each pile, cap, stringer, etc., is stenciled with the date of storage and at least once a year the entire

to 1921 only the main line ties were treated, or about one-half the total consumption. The experience with these ties having fully justified their treatment it was decided to treat all ties thenceforth. Unlike the supply of timber, however, tie production is quite extensively distributed. Moreover, treating plants were already in existence at Laramie, Wyo., and Wyeth, Ore. The most economical solution of this problem therefore required the adaptation of the principle of minimum haul and large storage yards to conditions which were relatively fixed in nature. The result was that the Union Pacific now has treating plants at three points—The Dalles, Ore., about 84 miles east of Portland; Pocatello, Idaho, and Laramie, Wyo.

The Dalles plant replaced the earlier and less modern installation at Wyeth where the seasoning conditions were unsatisfactory. It treats all ties for the lines west of

Pocatello; the Pocatello plant treats all ties for the lines between Pocatello and Laramie, including the lines to the north and to the south of Pocatello and the Los Angeles & Salt Lake, while the Laramie plant handles all ties required east of Laramie. With the adoption of creosote treatment for all bridge timbers used on the lines east of Pocatello, the Pocatello plant is thus strategically located to treat this timber also without additional haul. The storage yards at these three points provide for 2,800,000 ties per year, which is approximately equal to the annual consumption. This storage, in conjunction with an aggregate treating plant capacity of 4,600,000 ties per year, allows ample reserve with which to conduct all purchasing of cross-ties consistent with the most favorable prices during the year, as well as to provide adequate time for seasoning. A reduction of \$2,630,000, or about 50 per cent in the investment in ties within the 18 months following May, 1921, is an indication of the effectiveness with which the work was prosecuted in this direction.

Master Stockbooks the Key to Stores Control

Following the formation of the system organization it was apparent to all that effective stock control required

requisitions, including the classification under which the item is carried and space for the average amount carried per year, as well as for any special instructions governing its use. These master sheets are carried in every stock book, and each sheet carries the same list of materials on the same numbered page in every other book. Form 4277-A is an additional sheet which is carried in the stock book of every local store opposite each master sheet, for the purpose of recording, in the column ruled off for that month, the amount of each item on hand, the amount due, the amount called for by unfilled orders, the average monthly consumption based on issues for the last 90 days, the surplus, the quantity ordered and the requisition number.

One additional sheet is carried in each book of the local stores. This is form 4277-B known as the coupon sheet which is carried underneath sheet 4277-A for the purpose of producing a carbon copy of the stock record on the latter sheet and differs from this sheet only in the presence of perforations to permit that strip carrying the record of the particular month in question to be torn off for forwarding to the general office. As the coupons are received at the general office from each local store



The Interior of the General Store at Omaha, Arranged According to Modern Practice

the devising of an expeditious means of knowing positively the location and extent of all supplies on hand. The methods then in use would not suffice for this purpose without revision and extension. It was true that each unit of the property was using stock books with which to control the supply situation in its territory, but there was no system stock book showing all materials on hand at all points. It was the practice, instead, for each unit of the system to make out its own requisitions on its local purchasing agent without regard to any other units or stocks on hand. There was also dissimilarity between the books and the stockkeeping methods of each section which would hamper the successful functioning of the system organization. The time was ripe for a uniform system of stockkeeping with a master book in the general offices at Omaha, and the innovation was immediately introduced.

These stock books conform to the standards adopted by the American Railway Association. Form 4277 is the master sheet on which the materials are listed with all information necessary for the records and for filling

they are simply pasted in position on form 4277-D, a blank sheet carried in the master book opposite the master list, the effect of which is thus to provide a complete record for the month of the situation with respect to each item of equipment at all points, for convenient inspection.

Time Schedules Systematize Operations

With as many as 49 storage points on the system and fully 70,000 items of equipment to account for, there was the obvious possibility of confusion in handling this work in the absence of a systematic program of stock book-keeping. This led to the adoption also of a time schedule with which to conduct the work, of which the accompanying table is a part:

THE MONTHLY TIME SCHEDULE FOR INVENTORIES

Section	Description	Date coupons due in Omaha office	Date requisitions due in Omaha office
1	Air brake material.....	1st day	4th day
2	Car furnishings, etc.....	1st day	4th day
3	Hose, rope, leather, etc.....	3rd day	6th day
4	Train, station and shop supplies.....	3rd day	6th day
5	Shop tools and machinery.....	5th day	8th day
6	Wrought pipe and fittings.....	5th day	8th day

In this schedule all material falls into a pre-arranged classification. There are in fact 52 classes into which all supplies used by the Union Pacific are divided, including ties, rails, coal, etc., which are not carried on the stock books of the stores department but a record of which is nevertheless kept at the central point. As shown by the schedule, all air brake material falls into Classification (or Section) 1, while hose, rope, etc., fall into Classification 3, etc. Naturally, the stock books are organized to follow these classifications in listing the materials so that the master list will follow one classification through before taking up another, thus simplifying the work of stock-keeping to that extent. Likewise in the storehouse, such a classification results in an arrangement of the material on the shelves as will keep those materials of each classification together and each item in a classification in the order listed in the stock book, as a precaution against overlooking material to be checked, as well as to make the work of stockkeeping less arduous.

With this preliminary arrangement, the time schedule simply requires that inventory of all the material in a specified classification should be taken at all points on the system on the same day, and the stock books checked as to the quantities to be ordered after consideration of the quantity on hand, the rate of consumption, the volume of material owed outside points, etc. Immediately after the collection of this information the coupon or carbon copy of the record is detached and mailed to arrive at the central point on the prescribed day. This having been done, the stock book containing the original transcript of the inventory is delivered to the local office where requisitions for the needed materials are issued and mailed to arrive at the central point on the date prescribed by the time schedule. Coupons from all the stores covering all the material under the specified classification are assembled in the master book by the time the requisitions for materials of the same classifications arrive, thus permitting a checking of the requisitions against the stock book record of stock on hand over the entire system on the same day as they are received.

If the book shows a surplus at one point of material needed elsewhere it is then only necessary to issue an order upon the point of surplus for the direct transfer to the point of deficiency of a sufficient amount of the surplus to fill the requisition, the effect of which is obviously to reduce the surplus at one point and to prevent unnecessary purchasing for another point. The arrangement is also a provision for meeting emergencies since it indicates the point or points where materials can be obtained at once. If no surplus exists the emergency is met simply by drawing on those points which will suffer the least from a withdrawal of stock.

The chief function, however, lies in the systematic control of all the material by assuring that no material is purchased which is not actually needed or while any surplus exists on the line; it also affords that progressive record of consumption at all consuming points which is needed to stop waste in consumption which might otherwise avoid detection. The advantage of the time schedule in this scheme, of course, is principally in promoting the accuracy and expedition that result, (1) from having the condition of any class of stock at *each point* reported immediately after inventory is made instead of holding it until a complete inventory of all stock is made; (2), from having the condition of specified stock at *all points* reported at the same time for study in filling requisitions while the records are up-to-date, and (3), from having the report of all stock so distributed over the months as not to cause delay and confusion in the office work.

The implication from this schedule of operations is

that stock taking on the Union Pacific is a whole month's job. While it is true that the inventory of stock is distributed throughout the month instead of being taken during a single week or less, as was previously done on the Union Pacific and is still the practice on much of the mileage of the country, the work of inventory does not fall on the shoulders of one man but is distributed among several men. This results from the sectional plan upon which all of these storehouses are operated. According to this plan the area of each storehouse is divided into sections, each under the jurisdiction of a section stock-keeper who is responsible for every operation in his particular section, and no other. There are no partitions between these sections, of course, but the divisions are clearly defined so that no confusion or overlapping of responsibility is possible. Depending upon the size of the storehouse, each section stockkeeper may be assigned jurisdiction over from one to ten different classifications of materials, as outlined, in the stock book. It is his responsibility, therefore, to look after the unloading of all material in his section, its issuance, the orderly upkeep of the material and area, and among other things, the taking of all inventories. He has his own stock books for this purpose and his own desk (conveniently situated with reference to the area of his operations), and thus occupies a position analogous to that of the local store-keeper in every respect except for the absence of an office force.

In favor of this arrangement, it is advanced that (1), the expense is not appreciably greater than that under the old plan where all store operations are conducted under a store foreman and his subordinates with the characteristic bunching of stock shelving in one week or neglecting it altogether and concentrating on the taking of inventory in another, etc.; (2), the number of men employed is less than would be required under any other plan of equal efficiency, and (3), the system justifies itself for the contribution it makes to the general efficiency of the system organization, and for the training school it affords for new storekeepers.



Kadel & Herbert

Automatic Signal—a Recent Installation on the London & North Eastern

Safety Officers Meet in Chicago

*Success of Section shown in decrease in all classes
of railroad accidents during the year 1924*

THE annual meeting of the Safety section of the American Railway Association was held at the Hotel Morrison, Chicago, on April 28, 29 and 30, with an attendance of about 200. The meeting, the fifth held by this section, was marked by several innovations. A resolution was adopted directing one member from each of the regions—eastern, southern, and western—to organize groups for the purpose of holding one meeting in each region midway between the annual meetings. The meeting was opened by an invocation by Mrs. Carl R. Gray, Omaha, Neb., who spoke on the spiritual side of safety. She used the words "stop, look and listen," in a spiritual sense and interpreted them as meaning "stop trusting in man for your safety and look to God. Listen to the Giver of all good things and stop reading rules of safety in man's book and read them in God's rules." She asked that God be given the right-of-way in one's daily work as well as in one's home.

Among others addressing the meeting were E. P. Morrow, public member of the United States Railroad Labor Board, Chicago, who spoke on the Safety section and the Labor Board's interest in its work; R. H. Aishton, president of the American Railway Association, who offered a message of felicitation; W. J. Patterson, assistant director of the Bureau of Safety of the Interstate Commerce Commission, who spoke on the value of proper maintenance of equipment; George M. Graham, vice-president of the Chandler Motor Car Company, Cleveland, Ohio, who spoke on railroad safety from the public viewpoint; and Frank T. Singleton, member of the Public Service Commission of Indiana, who spoke on the state officer's viewpoint of the highway grade crossing question.

Lew R. Palmer, vice president of the National Safety Council, presented a paper tabulating the casualties to employees on Class 1 railroads in 1924 as compared with 1923, using the figures given in the accident bulletin of the Interstate Commerce Commission. Of the roads on which the total number of man-hours was 100 millions or more, those in which the ratio of casualties per million hours was less than 25, are entered in the order of excellence of their records as follows: the Union Pacific System, the Southern Pacific, the Southern, the Illinois Central, the Atchison, Topeka & Santa Fe and the Louisville & Nashville.

A. D. Gans, safety agent of the Baltimore & Ohio, Baltimore, Md., gave a talk on object lessons in selling safety, and reproduced a method used by the Baltimore & Ohio to promote interest in safety meetings. This consisted of a sleight-of-hand performance including some lessons on safety. G. E. Hill, general safety agent of the New York Central, New York, furnished moving pictures on safety and projected for the entertainment of the meeting a film entitled "Safety Pays," and another "Gambling with Death."

The following officers were elected for the ensuing year: Chairman, Robert Scott, director of insurance and safety of the Atlantic Coast Line; first vice-chairman, T. H. Carrow, supervisor of safety, insurance department of the Pennsylvania; and second vice-president, L. F. Shedd, superintendent of safety of the Chicago, Rock Island & Pacific. The Committee of Direction for the ensuing year will consist of L. G. Bentley, general safety agent of the

Chesapeake & Ohio, W. A. Booth, director of safety first of the Canadian National, R. L. Pilling, supervisor of safety of the Louisville & Nashville, and J. L. Walsh, supervisor of safety of the Missouri-Kansas-Texas. Those elected as members of the Committee of Nominations were E. R. Scoville, assistant superintendent of safety of the Baltimore & Ohio, F. W. Mitchell, director of personnel of the New York, New Haven & Hartford, J. D. White, superintendent of safety of the Illinois Central, C. L. LaFountaine, supervisor of safety of the Great Northern, and M. McKernan, supervisor of safety of the Missouri Pacific.

Report of Committee on Statistics

The Committee on Statistics, of which T. H. Carrow, supervisor of safety of the Pennsylvania, is chairman, comparing 1924 with 1923, reported that the railroads reporting to the Interstate Commerce Commission showed a reduction in the number of fatalities to employees per million man hours of 17 per cent and in non-fatal 11 per cent. The percentage of reduction in the casualty ratio for employees in 1924 is nearly one-third as great as the figure set by the Section last year as the goal to be reached by 1930. The committee believes that it is possible to reach the goal (35 per cent reduction) by 1930. The total of accidents of all classes during 1924 was 6,617 killed and 143,739 injured, as compared with 7,385 and 171,712 in 1923. Of this number grade crossing accidents killed 2,149 and injured 6,525 in 1924 compared with 2,268 killed and 6,314 injured during 1923; a decrease of 5 per cent in killed and an increase of 3 per cent in injured.

The committee submitted a tentative program of safety activities for 1925 for member roads, which was adopted by the meeting. The program will be sent to the member roads in 12 installments, each installment to be forwarded 30 days before the beginning of the month in which it is to be used. The first installment will be accompanied by a synopsis of the whole program as a matter of preliminary information. The program starts with the month of May and ends with April, 1926. Subjects to be considered during May are highway grade crossing accidents and shop machinery, stationary engines and motors, cranes, etc. During June the program calls for the consideration of (a) Struck or Run Over by Cars or Locomotives and (b) Handling Freight or Supplies.

Suggestions were given for carrying out this safety program. These included oral warnings and instructions, the posting and distribution of safety bulletins, personal letters, safety rallies and moving pictures, superintendent's staff and safety committee meetings, safety inspection, proper instruction and strict enforcement of safety rules, and bulletins showing the record of each month's casualties by departments.

Report of Committee on Crossing Accidents

The Committee on the Prevention of Highway Crossing Accidents reported on the decrease in the number of casualties and on the sale of advertising devices. The number of universal posters used decreased from 1,153,967 in 1923 to 926,851 in 1924. The number of correspondent stickers decreased from 5,597,300 to 4,299,500;

and the number of postcards from 1,097,300 to 849,100. The decrease was due partly to members having over-supplied themselves in previous years. During 1923, the roads making purchases numbered 184, while in 1924 only 138 did so. The result has been a material decrease in the display of advertising matter from 10 posters per mile of railroad originally intended in 1922 to 3.5 posters per mile in 1923 and 2.8 in 1924.

The results of the careful crossing campaign from June to September, 1924, showed a decrease of 15 per cent in deaths, followed by a decrease of 6.5 per cent in deaths during the last three months of the year. During the 12 months of the year 119 fewer persons were killed on highway crossings, a decrease of 5.2 per cent and 211 more persons were injured, an increase of 3.3 per cent. On December 31, 1923, there were 15,092,177 motor vehicles in use in the United States, and a year later 17,700,000, or an increase of 17 per cent. Estimating by the casualty rate for the period June 1 to September 30 there was in 1923 one casualty to 5,029 motor vehicles registered, while in 1924 there was one casualty to 6,043 registered.

The committee recommended that a meeting of the Committee on the Prevention of Highway Crossing Accidents should be held in April rather than later, so that it would be possible earlier to put in the possession of members data for the campaign. The committee presented a new poster with the slogan, "Think! Driver, Think!" supplemented by the perpetual suggestion, "Cross Crossings Cautiously." An illustrated booklet has been prepared which presents various classes of accidents on both single and double track and at protected and unprotected crossings.

R. H. Aishton Congratulates Members

At the luncheon held on April 28 R. H. Aishton, president of the American Railway Association, addressed the meeting and extended congratulations on the work accomplished by the Safety section since its inauguration. His address included a comparison of casualties on railroads since 1920 and credited the Safety section with making railways a safe place on which to travel. His address in part is as follows:

In 1924 the railways of the United States transported passengers equal to nearly ten times the present population of the country, with fatalities resulting to only 149 of that number; in other words, for every passenger fatality during the past year the railways transported safely a total of 6,314,000 passengers, an army consisting of over two million more persons than the entire armed forces of the United States during the Great War. This was the largest number ever transported safely, except for the year 1923, and it indicates the basis which the insurance companies have for making passengers by railroad conveyance a preferred risk.

Injuries to passengers show a relatively gratifying reduction, being 15 per cent less than the average of the previous four years. With the above as a basis, it is evident that the safety of passengers by rail during the past two years has been greater than in any previous period in railroad history. For this accomplishment I felicitate the safety officers of the railroads and the Safety section they have organized.

All of the above refers to your patrons. How about the officers and employees? I do not think there is any question but that the work of your Safety section has had the effect of placing railroad employment in a distinctly less hazardous class during 1924. Fatal accidents to employees were 20 per cent below the four-year average of the years 1920 to 1923, which period includes the heavy year 1921.

Since 1888, when the Interstate Commerce Commission

first began recording accidents, 1924 stands out as a banner year for its low record of employee fatalities; for with the exception of 1921, a year of general business depression and consequent relative inactivity in the railway world, the report shows the smallest number of fatalities ever recorded. Injury to employees was also on the decline. This conclusion, therefore, can only be reached—that the total and relative number of employees killed in 1924 was smaller, with only one exception, than in any previous year.

The figures also show that the relative number of trainmen in service killed was the lowest of any year on record. For this you are likewise entitled to felicitation.

The figures show generally that the number of trespassers killed was much below the average of the last twenty years. As a matter of fact, in 1923 it was 2,556, while twenty years ago, in 1904, the number was 5,105. For this I felicitate you, in that your efforts to educate the people and to keep trespassers off railway tracks have met with such success.

Grade crossing accidents showed a reduction of 119 persons killed, compared with 1923. The fatalities resulting from this class of accidents have increased with the increasing use of automobiles on the highways, but it must be encouraging to your section to see the consequent and gratifying reduction in the proportion of accidents to cars registered. In 1920 there were 137.9 fatalities for each 1,000,000 automobiles registered, while in 1924, the average was 95.4. When you consider the increase of 6,000,000 vehicles registered, the increased use and greater crowded condition of our highways, and the tremendous increase in the potential risk, it is indeed cause for the most sincere felicitation.

You are engaged in the conservation of the most precious thing in the world, the life and happiness of human beings. While congratulating you on what has taken place, I cannot too strongly urge you, with this record behind you as an inspiration, to redouble your efforts. Much still remains to be done.

W. J. Patterson Emphasizes

Proper Equipment Maintenance

W. J. Patterson, assistant director of the Bureau of Safety of the Interstate Commerce Commission, spoke on the value of proper maintenance of equipment, taking the place of Frank McManamy, commissioner, who was unable to be present. In his paper he divided accidents into three classes and showed the causes and remedies for each class. His paper in part is as follows:

The claim is often made—and it is not without merit—that accidents do not happen,—they are caused—therefore there is always a remedy. Be that as it may, there is no gainsaying the statement that a large percentage of railroad accidents are preventable. Broadly speaking, railroad accidents are due to one of three causes or some combination of the three. (1) Defective or improperly designed equipment; (2) improper methods of work or operation; (3) carelessness or inattention on the part of employees. Or, to epitomize, every preventable accident is due to some failure of the equipment, the method of operation, or the man. A very small percentage of the accidents and injuries in connection with railroad operation result from collisions or derailments of the character which furnish large headlines for the newspapers, but the great majority result from neglect of the little things in the way of repairs or performance which occur from day to day in connection with the operation of the transportation machine. And even the larger and more serious accidents can usually be traced directly to some neglect of minor matters. Investigations of these accidents show that it is usually some small defect which would ordinarily

pass unnoticed and which is often not thought worthy of careful attention.

The greater part of the responsibility in accidents rests with the officers because it is not possible to separate authority and responsibility. The average employee will endeavor to meet what he believes to be the wishes of the officer in charge and if overlooking minor defects and sending out equipment without repairs in order to save time, represents, in the mind of the employee, the desire of the officers, that is what will happen. If, on the other hand, it is known that failure to repair small defects will not be overlooked and that it is the earnest desire of those in charge of the maintenance to have careful inspection and thorough repairs, a higher standard of maintenance will result.

Statistics are not available which show separately accidents and casualties which are caused by defective equipment, but the importance of making repairs to minor defects is clearly illustrated by the records. A chart published annually by the Bureau of Locomotive Inspection covering the period from 1912 to 1924 shows for this entire 12-year period, curves representing defective locomotives, accidents, and casualties; and the items follow each other up and down with an almost imperceptible variation. An increase of defective locomotives is followed promptly by an increase in the number of accidents, and a decrease in the number of defective locomotives is followed with equal promptness by a decrease in the number of casualties. While the responsibility of the employer should in no way be lessened, his burdens can be substantially lightened by prevention in the shape of remedying the conditions which produce accidents rather than by attempting to compensate for the loss after the accident has occurred.

As a result of the work of this and similar organizations, we are making progress. It is true that, due to increased pressure under which employees work at such times, the number of casualties will increase in periods of heavy traffic and decrease when the traffic is light, but to my mind this can be controlled by changes in methods of operation. On the whole, however, a substantial improvement has been made as has been shown by the records.

F. T. Singleton, member of the Public Service Commission of Indiana, spoke on the state officer's viewpoint of the crossing problem. He outlined a course for prevention in schools and state commissions and suggested the re-locating of highways as a means of eliminating accidents. His address in part is as follows:

More than 68 per cent of the people killed in automobile accidents on the country roads live in the cities, and 10 per cent of all those killed in such accidents on the country roads are killed at grade crossings. The ratio of automobile accidents [fatalities] to railroad accidents is instructive; it is—1911, one to six; 1920, three to two; 1921, two to one; 1922, two plus to one; 1923, two minus to one. An organized educational program has a willing public awaiting for further improvement in this ratio.

Grade crossings in the United States number 258,786. Grade crossings created during the last two years number 8,114. Grade crossings eliminated during the same period, 1,839. Net increase in the number of grade crossings during the past two years 6,275 or more than 3,000 per year. Four out of every five grade crossings have no protection of any kind, except the standard signs.

Grade separation can be had only to a limited extent because neither the local communities nor the railroads could meet the expense of a general and extensive policy of immediate grade separation. But the demand for safety is immediate. Grade crossing elimination by re-

routing of either the highway or the railroad tracks is the most useful method because it can be more immediate and more general in application. It is as effective as separation of the grades because it disposes of the crossing.

On state highways in Indiana, the division of cost of grade separation is divided equally between the railroads and the public—the Indiana State Highway Commission representing the public and paying the public's share of the expense out of state highway funds. In Indianapolis, the capital of Indiana, the railroad pays one-half the expense of grade separations. In all other districts in Indiana the division of cost is 75 to 25 per cent, the railroad paying the larger per cent. The State Highway and Indianapolis acts were the last legislative expressions on the division of costs. I believe those expressions are correct and should be made state-wide—yes, nation-wide.

An essential and important field for the successful application of this work is in the educational field. Caution is one result of education, because caution follows correct thinking and correct thinking follows careful thinking, which is education accomplished. The public schools are the greatest organized field for education and they are accessible. An interstate organization should be used in which the heads of the state school systems would be easily available. It should not be difficult to induce them to introduce interstate conferences for safety promotion. The state superintendent of schools in Indiana is interested now.

Since competition is known to be a success in railroad safety organizations, why would it not be a success also between public schools of a city, public schools of a county, or a state, or between the public schools of different states? Your safety organization is composed of men and your public schools are composed of the children of these men and the children of their neighbors—all human beings and equally controlled by similar motives when subjected to similar influences. Influence the teachers and pupils in the public schools by giving the knowledge of your experiences and the knowledge of the results you have obtained.

Many states have highway commissions, public service commissions, public utility commissions, etc. These organizations all have more or less direct interest in the promotion of safety at grade crossings—in saving human life. The executive and administrative officers of state governments would wish these commissions to be reasonably active in securing grade crossing protection. The people of the several states would commend their respective commissions for it. The people of other states would point to the commissions leading in this movement as progressive and would proclaim their acts as worthy of emulation. Reciprocal and favorable comment by the commissions of the several states about the proper plans and performances of each other would promote the general safety program wonderfully.

I believe that an interstate organization should be formed to promote suitable means of protection at grade crossings; that all states whose industrial or civil safety organizations will show evidence of interest in the movement should be included; that this proposed organization should be built upon or created by an existing organization of prominence and power that is now of good standing in the several states. It should not be partisan for any single interest; it should not be dominated by any class of selfish interests. Its purpose should be to save human life and to halt the destruction of property.

A. C. Hinckley, superintendent of motive power and machinery of the Oregon Short Line at Pocatello, Idaho, spoke on ways and means to prevent accidents in the

maintenance of equipment and stores department. He touched briefly upon the arrangement of materials and tools in shops as an aid to accident prevention and described methods in use on his road. He also pointed out the effect of a man's home conditions upon his work and upon its relation to accidents. This paper in part is as follows:

It is estimated that approximately 90 per cent of the personal injuries occurring in shops can be attributed to some thoughtless or careless act of a fellow employee. Tools must be kept in good condition, and when not in use, put in their proper place, as the matter of good housekeeping enters largely into the safety question and has a good effect on the employees.

Another important question is good lighting and ventilation, which adds to making working conditions agreeable and safe, and a contented and satisfied employee is an asset to any corporation as the response from him is wholesome and mutual in meeting requirements made by employing industries and both employer and employee are responsible for each other's interest and safety.

Many accidents occur due to home conditions—when the bread winner's mind is other than on his work. We have a safety and welfare man in our large shops who gives his entire time to matters pertaining, not only to safety conditions of the shop but to the home conditions of those who meet with accidents or who are careless in their work, so as to assist in making it possible for the employee to be efficient. We watch over the conduct of some of our employees, both while on and off duty, so as to aid them.

In our Pocatello shops last year, where we have some 1,200 men employed, we went 216 days without a reportable injury, which reflects good supervision, safety appliances, good housekeeping, good ventilation and satisfied employees. When employing new men or apprentices we require a physical examination. We also acquaint the boy who is to enter as an apprentice with standard rules so as to start him right.

At this time we are introducing athletics, and each of the four units of the Union Pacific system is to have an athletic instructor who will enter into friendly relationship and cooperation.

In storing material the tray system is used for symmetrical and evenly balanced storage, which not only acts as a perpetual inventory, but eliminates hazard of accidents through material falling unexpectedly. Where material is not adaptable for storage on open racks, it is placed on unit platforms, which are arranged to provide accessible avenues for convenient trucking. Smooth floor surfaces are provided in buildings through the use of mastic flooring, and platforms are kept in perfect condition at all times to insure safe trucking, which prevents a hazard. Material lined up on the tray system and on open shelving and the uniform method of storing material on unit platforms, has a pleasing appearance, and has a psychological effect of stimulating contentment and interest among employees. Interested employees are continually striving to keep the materials they handle in uniform arrangement, which eliminates, to a very great extent, hazards of accidents.

The general store at Pocatello has a local committee with the general storekeeper as the chairman which is organized with members from the various gangs, such as helpers, truckers, reclamation men and supply-train employees. This committee meets once each month, offering suggestions and conducting an intensive campaign among employees in the department on matters pertaining to "Safety First" thus stimulating interest in this direction.

Records are kept of the number of men attending each

meeting, and also of the number of men talked to regarding safety matters during the month. This results in keeping the subject alive.

I. C. C. Creates Section on Efficiency of Operation

WASHINGTON, D. C.

IN a reorganization of its Bureau of Service recently effected the Interstate Commerce Commission has made provision for keeping up a study in a regular way, with special emphasis from time to time if occasion demands, of the efficiency and economy of railroad management. The Bureau of Service heretofore has devoted itself mainly to the subject of car service and related matters involving the relations between carriers and shippers, but it has now been divided into three sections, one on car service, one on efficiency and economy of operation and one on transportation of explosives and other dangerous articles.

The transportation act, in the rate-making section which directs the commission to adjust rates in such a way as to produce a fair return, contains the language "under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment." The commission in its last annual report said that "to go into the question of efficiency of railroad management in a thoroughly effective way would necessitate an organization of technical experts especially qualified to investigate its numerous phases and would also require a large additional appropriation," and that to inform itself so far as practicable of the progress of the carriers it relied to a large extent on statistical reports and other information gathered at hearings. However, the commission has for some time been conducting a proceeding of investigation into the efficiency and economy of management of the carriers, particularly with reference to expenditures for locomotives and car repairs, and has issued several reports criticizing various carriers for their practices. The new section is to continue the study of such matters as have been developed by the investigation and will devote its attention to other phases of the general subject of efficiency and economy which may develop from time to time.

The Bureau of Service is under the direction of Division 5 of the commission, Commissioners Cox, Esch and McManamy, and W. P. Bartel is director of the bureau. The Car Service section will be under the direction of Frank Smith, with the title of assistant director. The section on Efficiency and Economy of Operation will be under Harvey Boltwood, assistant director, who has been connected with the Bureau of Locomotive Inspection and was mechanical engineer and supervisor of equipment of the Railroad Administration. The Explosives section will be under the direction of L. I. Doyle, with the title of explosives agent.

The Bureau of Service has arranged in connection with the Department of Agriculture to conduct extensive tests of the transportation under refrigeration of shipments of fruits and vegetables, particularly shipments of lettuce and other vegetables from California and the matter of top icing of lettuce and green corn from Florida. It is also starting an investigation of the refrigeration of shipments of strawberries from Virginia and the eastern shore of Maryland with particular reference to the possibility of loading the maximum of 340 crates to a car without spoilage of the berries loaded in the middle of the car. A similar investigation has been requested by the peach shippers of Georgia.



The Santa Fe Offices Face on the Kansas State Capitol Grounds

Santa Fe Opens Largest Railroad Office Building

New structure at Topeka provides well appointed facilities for 1,500 officers and clerks

THE new office building which the Atchison, Topeka & Santa Fe placed in service at Topeka, Kan., on April 18, is a notable structure. Not only is it the largest building used exclusively for the offices of a single railway but it also embodies the latest developments in structures designed for office use. The building as now completed represents the fulfillment of a project undertaken in 1910 when the first wing of the present structure, 75 ft. by 150 ft. in plan, was built as an annex

to an old office building which was razed in 1923 to make room for the addition which completes the building in its present form.

The new structure as now completed comprises a central unit 50 ft. by 150 ft. with two wings, 75 ft. wide by 150 ft. deep. It has a frontage of 300 ft. on Jackson street facing the grounds of the Kansas state capitol. One of the wings has a frontage of 150 ft. on Ninth street, while a court between the two wings 100 ft. by



The First Step—The South Wing (Center) Was Built in 1910 as an Annex to the Old Office Building (Left)

Effective Illumination System

The excellent natural illumination afforded in the building is supplemented by a well-designed system of direct and indirect electric lighting which insures the



Switch Board, Selector Rack and Repeater Tables in the General Telegraph Office

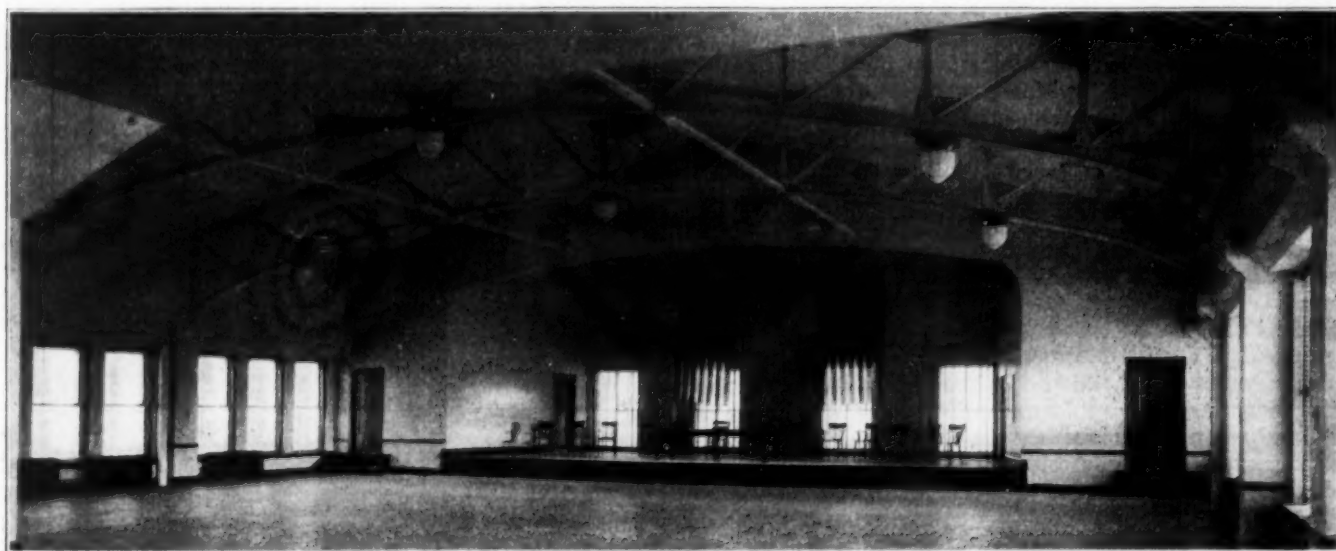
proper diffusion of the light, an ample intensity at the working level and the elimination of shadows. Another feature worthy of note is a complete system of clocks

with a view to the maximum use of available area with a minimum of corridor space and to provide a maximum flexibility to meet the requirements of each department. While the basic plan on each floor is the same, the arrangement of partitions on no two floors is alike. The building has two entrances, one in the center of the Jackson street frontage on each wing. Each of these leads directly to an elevator lobby serving three elevators in the original or south wing and four elevators in the north wing. All of the elevators were supplied by the Otis Elevator Company, Chicago, and those in the north wing are equipped with full automatic control and interlocking gates which operate in connection with a leveling device which brings the cars to the floor level without action on the part of the operator.

The general plan provides for corridors down the center of each wing with a cross corridor through the center of the main unit of the building connecting the two elevator lobbies, but on the floors assigned to only one or two departments in which the space is occupied by large clerical forces, most of this corridor space has been thrown into the department areas. By locating the toilet rooms immediately adjacent to the two groups of elevators on each floor the elimination of the corridor space is accomplished without interference with access to the toilets.

A distinctive feature of the plant is a large room on the tenth floor of the north wing which has been set aside for the community use of the employees. This room is 70 ft. by 75 ft. in plan and is supplemented by a stage, dressing rooms, a kitchen, a check room and a ladies' parlor so that it may be used for entertainments, dances, dinners, assemblies, etc., as occasions arise, but will be used primarily as a gymnasium or recreation room, provision having been made for shower baths on an eleventh floor over the central unit of the building.

The equipment in the building is of a nature which conforms to the high character of the structure. Steel filing cases and fixtures are provided for the storage of all records on the working floors and in the vaults. A complete pneumatic tube system has been installed for the dispatch of messages and mail between the depart-



The Assembly Hall on the Tenth Floor

under which 135 clocks distributed throughout the building are electrically controlled both as to winding and adjustment by a master clock located in the building superintendent's office.

The floor arrangement of the building has been designed

ments. Rooms, occupied by large numbers of typists, comptometer operators and telegraph operators have been lined with sound insulators to deaden the noise of the machines, as a result of which the rooms are remarkably quiet. The telegraph department is equipped with ap-

paratus of a most complete character designed to accommodate 70 operators.

The building was designed by E. A. Harrison, architect of the Santa Fe, under the general supervision of C. F. W. Felt, chief engineer, system, and the construction was carried out under the supervision of H. W. Wagner, chief engineer, Santa Fe, Eastern lines, the Swenson Construction Company of Kansas City, Mo., being the general contractor.

Nickel Plate Hearing

WASHINGTON, D. C.

THE hearing on the proposed Nickel Plate unification was resumed before Commissioner Meyer of the Interstate Commerce Commission on May 6. Richard F. Grant, president of the Chamber of Commerce of the United States, testified that in his opinion the plan is in the public interest from the standpoint of improved service and reduced cost of operation and that it ought to be encouraged as blazing the way toward further progress in the same direction. He first filed for the record copies of the various resolutions and referenda taken by the national chamber in favor of a policy of railroad consolidations and said that both improved service and reduced cost, leading eventually to lower rates, should result from the unification of railroads. It is now the national policy, he said, to foster such unifications as are in the public interest, but the men who have the vision and the ability to bring them about are rare and the Van Sweringen brothers are two such men. After a study of the general question of railroad consolidation and an examination of the Van Sweringen plan and the testimony already taken in this case, he was convinced that it completely satisfies the public interest. He spoke of the difficulties in making a complete plan of consolidation and expressed the opinion that when a logical and feasible plan is advanced it should be taken advantage of as making headway toward the desired result.

Under cross-examination by representatives of the minority stockholders of the Chesapeake & Ohio and Hocking Valley, Mr. Grant said he had not considered the terms and conditions offered to the various stockholders but had looked at the proposition from the standpoint of the public interest and the results to be obtained as he saw them from his experience, as a business man and a shipper. He said that he would probably consider the opinion of Professor Ripley, who had recommended a different disposition of the lines, as superior to his from the expert standpoint but not necessarily from the public interest standpoint, and also he did not know that Professor Ripley might not be desirous of changing his mind now.

Asked whether he considered the plan as amounting to a consolidation, Mr. Grant said he understood it was not, but a plan for a unification of management and operation of properties which would maintain their corporate identity, and when asked whether the results could not be obtained under stock control without a 999-year lease he said he thought that even with common directors three separate organizations could not be brought under a unified policy so well without a lease as with one because each would be trying to make its own record. When pressed regarding the treatment of the minority he said that such questions nearly always arise in cases of this kind but that they present a different problem from that of the general public interest and that there are "different kinds of minorities." The minority holders who have held their stock as an investment for a long time are en-

titled to the utmost consideration and should at least be left in as favorable a position as they were before but the kind of minority represented by those who buy in at the last minute and "cover themselves with woe," the "self-anointed objectors," should be dealt with rather severely and would be well treated if they got their money back "without counsel fees." However, he said that the public interest demands that the stockholders should be treated justly and the public authorities should probably see to it that they receive fair treatment.

J. J. Bernet, president of the New York, Chicago & St. Louis, gave some additional testimony regarding the operating features of the proposed plan. One of the advantages, he said would lie in the opportunity for better utilization of shop facilities, because the Chesapeake & Ohio have inadequate facilities while the Erie and Pere Marquette have a surplus. This led to a reference to the Erie closing down its shops part of the time and letting contracts for repair of locomotives at outside shops when it needed a rush of repair work. He said he favored a policy of keeping the shops working at maximum capacity regularly and utilizing periods of slack traffic to "put back into the engines the mileage run out in periods of heavy traffic." He expressed the opinion that this policy, which had been followed on the Nickel Plate, makes for a better feeling among the rank and file and more efficient operation, while sending locomotives to outside shops, except when it is necessary because of a lack of capacity, is not in harmony with the spirit of the transportation act or the decisions of the Labor Board nor financially profitable. He said the Hocking Valley had sent locomotives outside because it has not enough shop capacity but that it is planned to increase it and also to spend over \$4,000,000 in adding to the locomotive shop facilities of the Chesapeake & Ohio at Richmond, Huntington and Clifton Forge.

W. C. Hull, assistant to the vice-president in charge of traffic of the Chesapeake & Ohio, testified regarding the new routes and improved handling of traffic that would be possible under unified operation, saying that the Chesapeake & Ohio would have "more strings to its bow" for the distribution of its traffic.



Wide World

Steam Enginemen Learning to Become Motormen

Locomotive enginemen of the Southern Railway's (England), recently electrified suburban lines, were given 12 days in which to qualify as electric motormen for multiple unit trains.



Railway Employee Magazine Editors in Session

Employee Magazine Editors Meet

The addresses and discussions cover the larger matters of policy and better relationships

THE annual meeting of the American Railway Magazine Editors' Association was held at the Hotel Rennert, Baltimore, Md., May 1 and 2. Robert M. Van Sant, editor of the Baltimore & Ohio Magazine, presided. Two meetings of this association are held each year, the annual meeting being given over very largely to more important matters of policy and the fall meeting to detail questions involved in the editing and publishing of these magazines. The organization includes representatives of 47 different periodicals, published by 43 railroads, with an approximate circulation of 1,400,000 copies. In addition to representatives from these periodicals, several railroads which are contemplating publishing similar magazines sent representatives or observers to the meeting.

President Daniel Willard of the Baltimore & Ohio, made an address of welcome, dwelling upon the significance of Baltimore as the place of meeting. In some ways Baltimore can be considered the birthplace of American railways, since the citizens of Baltimore were the first to use rails for the transportation of their products, because of the necessity of meeting the competition of cities which were favored with water routes to the interior. The first telegraph message which was ever sent was received in a building at the Mt. Clare shop plant in Baltimore. Mr. Willard emphasized the value of the railroad magazines in teaching Americanism; this he characterized as "freedom of opportunity" or treating others as you would wish to be treated if you were in their place. The magazines can be a great influence toward better living, cleaner thinking and better relations. They should constantly state the truths about the relations of the railroads to the public and the employees. President Willard also emphasized the necessity of aiming high; the standard and intelligence of railroad workers is such that it is not necessary to talk down to them.

Ivy L. Lee, advisor in publicity to the Pennsylvania System, addressed the conference on "The Railroads and the Public." The function of a railway magazine is to help the employees to know each other and to bridge over the gulf between the management and the workers. Mr. Lee suggested that the railroads are involved in a tangled network of legislation and regulation. Apparently it is im-

practicable to unravel this. The solution lies in getting the public to so thoroughly believe in the motives of railroad men that it will instruct its representatives to let the railroad managements alone if they are doing things right. In this way it will be possible to encourage initiative and originality on the part of the railroads. It is impossible to secure support from the public unless a railroad first "sells" itself to its employees. Mr. Lee also spoke at some length on news, and defined it as that which "is interesting to the public today." Frequently little human interest items that show the human nature or spirit behind the railroad, are most effective. It is important, if the proper impression is to be made, to indicate to the public who is responsible for the facts which are selected for publication.

Roy V. Wright, managing editor of the *Railway Age*, spoke on "The Railroads as Builders of Men." Morale is all-important for success in the army or in an industry. To develop the morale to the highest point in the army the slogan has been adopted, "The Army Builds Men," and an effort is being made to develop every man in the army to the limit of his capabilities. This same principle can be applied with equal advantage to the railroads. A brief survey was made of what the railroads have accomplished during the last few years in improving the relations between the managements and the employees and securing a larger degree of co-operation from the employees. Special emphasis was placed upon helping boys and young men to find their places in the organization and to fit themselves for larger fields of usefulness. The essential features of the program of the Railroad Younger Men's Conference which was held at Detroit under the direction of the Transportation Department of the Y. M. C. A. were outlined. Extracts were read from a number of letters received from boys who attended this conference, showing how it had helped them as individuals and also in promoting worthwhile activities among their associates who were not fortunate enough to attend the conference.

Donald D. Conn, manager of the Public Relations Section of the Car Service Division, American Railway Association, spoke on "The Relationship of the Car Service Division to the Railroads and the Public." He explained

the constructive work which is being done by the regional shippers advisory boards and indicated how the railway magazines might be helpful in getting the employees to appreciate this development and to more intelligently participate in the effort to improve the service.

Henry Bruere, third vice-president of the Metropolitan Life Insurance Company and a director of the Chicago, Rock Island & Pacific, spoke on "The Relation of the Employees' Magazine to Better Management." He stated that the biggest individual asset of the railroads is within the ranks. If we are to enlarge the interest of the workers, their horizon must be extended and we must dramatize the job. What is needed is an atmosphere and conditions which will get the entire organization into the spirit of playing a game, or in the case of the individual, in promoting an enthusiasm and interest in the job which he has made his life work. Mr. Bruere mentioned ways in which the railroad magazines could be helpful in bringing about such a result.

Whiting Williams, economist and author, spoke on "The Railway Worker's Mind and His Magazine," or "What the Worker Wants of His Editor." Mr. Williams has spent much time, both in this country and abroad, in working and living with the workers in different industries. No matter how menial his position, the worker takes real pride in his work because he recognizes that his particular job or efforts are essential to the welfare or progress of the industry as a whole. Recognizing this, the editor can do much to dramatize the various jobs or vocations in the effort to bring about a maximum spirit of interest and co-operation.

On the evening of the first day of the meeting, the Baltimore & Ohio Railroad acted as host at a dinner at the Rennert Hotel and then entertained the members by taking them to the eleventh annual concert and dance of the Baltimore & Ohio Glee Club at the Maryland Casualty Club House.

On the second day of the meeting Robert S. Binkerd, vice-chairman of the Committee on Public Relations of the Association of Railway Executives, spoke on "Public Relations Work." The attitude of the public toward the railways has changed greatly in more recent years. Now is the time for carefully planned constructive work in educating the employees and the public as to the economics of transportation. The problem of the railway managements is to get the men to work *with* them—let them in on the fun of the game.

A report was received from the Committee on Advertising, Holcombe Parkes (Norfolk & Western), chairman. The report of the Committee on Constitution and By-Laws was presented by Ray D. Casey (Pennsylvania), chairman. The new constitution and by-laws were adopted. The organization now has a new name, The American Railway Magazine Editors' Association. It was decided to hold the next annual convention at St. Paul, Minn., and to hold the fall meeting at Cleveland, Ohio.

The following officers were elected: President, K. D. Pulcifer, editor, Pennsylvania News (Northwestern Region); first vice-president, C. W. Y. Currie, managing editor, New York Central Lines Magazine; second vice-president, Thomas H. MacRae, managing editor, Santa Fe Magazine; secretary-treasurer, George Flatow, editor, Long Island Railroad Information Bulletin; executive committee: K. C. Ingram, Southern Pacific; E. H. McReynolds, Missouri Pacific; W. S. Thompson, Canadian National; and R. M. Van Sant, Baltimore & Ohio.

Most of the members left for Norfolk, Va., on Saturday evening, as guests of the Chesapeake Steamship Company. The group was entertained on Sunday at Cape Henry as guests of the Norfolk & Western. T. P.

Thompson, president of the Norfolk Chamber of Commerce, made a deep and striking impression in exhibiting some of the recent resort advertising folders issued of railroads and steamship companies by calling attention to statements and illustrations which were so inaccurate or out-of-date as to appear ridiculous to those to whom they wished to appeal.

Preliminary Report on Lehigh Valley Train Control

WASHINGTON, D. C.

THE Interstate Commerce Commission has made public a letter written by E. H. De Groot, Jr., director of its Bureau of Signals and Train Control Devices, to E. E. Loomis, president of the Lehigh Valley, following the preliminary inspection by the commission's engineers of the installation of the intermittent inert inductive type of auto-manual train stop device of the General Railway Signal Company on the 25.85 mile section between Phillipsburg, N. J., and Flemington Junction, N. J. As a result of this inspection, the following criticisms and comments are offered:

1. The track inductors as located and fastened make displacement or removal unlikely, and it is therefore believed that the employment of detectors is not required on this installation.
2. The closing of the inductor winding results in a clear operation of the device; hence a cross in the wires leading to this winding would result in a false clear condition of the inductor. It is, therefore, vital that the installation and maintenance of the track inductor circuit shall be such as to protect the integrity of this circuit.
3. The track inductors are located at the signals, and the stop operation for an occupied block is provided at the next signal in the rear of that at the entrance to such block. This requires an engineman to forestall at a caution signal in order to avoid an automatic application of the brakes, and should this block be too long and an engineman not be alert while running therein after forestalling, the train could approach the stop signal at such speed as to overrun this signal.
4. Track inductors should be provided at braking distance from the signals governing entrance to train control territory.
5. It is suggested that the type of fouling protection employed at those crossovers which are not equipped with special circuits be considered with a view of possibly securing increased protection.
6. It is suggested that the smaller actuator piston which operates the rotary valve to service position be checked to make sure that its area provides an ample margin of safety for overcoming any extreme rotary valve frictional resistance which might develop.
7. Since certain crosses in the locomotive circuits could result in false clear operations, it is obvious that the integrity of these circuits must be protected.



A Track Inspection Car, Tauern Line, Austrian Federal Railways

Delaware & Hudson to Lease B. R. & P.

*Will pay 6 per cent on both issues of latter's stock—
Two roads do not connect*

ON Friday, May 1, W. T. Noonan, president of the Buffalo, Rochester & Pittsburgh, made the following statement: "The Buffalo, Rochester & Pittsburgh has received a proposal for the lease of all its property to the Delaware & Hudson Company for 999 years, for a rental sufficient to provide 6 per cent net annual dividends upon the present outstanding preferred and common stocks of the Buffalo, Rochester & Pittsburgh. The proposal also provides for the payment of all fixed charges and the assumption of maturing obligations of the Buffalo, Rochester & Pittsburgh. This proposal has been favorably acted upon by the board of directors of the Buffalo, Rochester & Pittsburgh and in due course will be submitted to the stockholders."

Like most of the recent announcements relating to

of the Norfolk & Western and which believed that the Virginian should be assigned to the Pennsylvania rather than to the New York Central as was proposed.

President L. F. Loree of the Delaware & Hudson did not participate in the negotiations relative to the four-system plan. It is the general belief that after the present steps are taken looking to the lease by his road of the Buffalo, Rochester & Pittsburgh, he will be found to have placed himself in a much stronger strategic position in which his views will have to be taken into account in further consolidation negotiations. In the four-system plan, the Buffalo, Rochester & Pittsburgh was assigned to the New York Central.

Lines of the Buffalo, Rochester & Pittsburgh

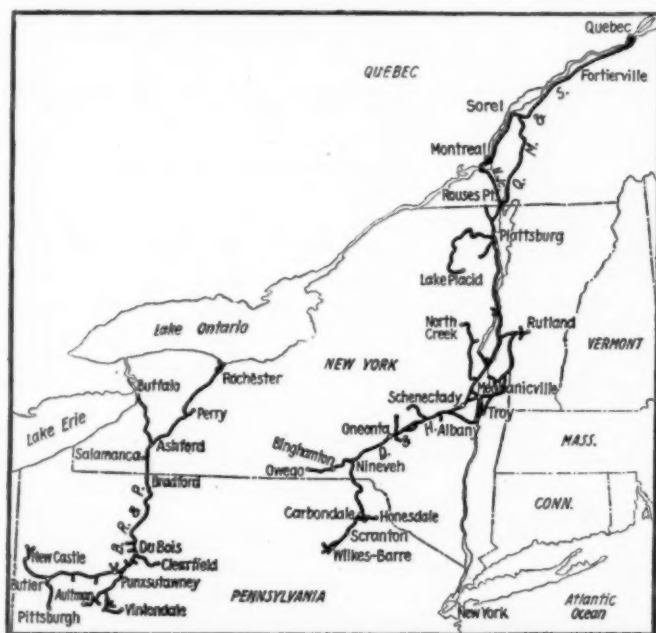
The lines of the Buffalo, Rochester & Pittsburgh extend from Rochester, N. Y., and Buffalo, meeting at Ashford, N. Y., and then extending south to Butler, Pa., from which latter point trackage rights give access to New Castle, Pa., and Pittsburgh. An important branch extends eastward to Clearfield, Pa., and branches extend also to Vintondale, Aultman, etc. The company operates 590 miles of railroad of which its own 370, leases 90 and has trackage rights over 130. In spite of the large number of miles operated under trackage rights, the company has an annual debit joint facility rent balance of but about \$100,000, due to the fact that other carriers use its rails in exactly the same amount it uses trackage rights itself, namely, 130 miles.

Normally, about 60 per cent of the road's traffic is bituminous coal, and about 40 per cent of the total coal tonnage is railroad fuel coal. The coal originates mostly at the southern end of the line. It moves northward, largely to Rochester, where it is distributed to local industries, transshipped by boats for movement on Lake Ontario and the St. Lawrence to Ogdensburg, N. Y., Montreal, Que., etc., or moved by car ferry, owned jointly by the Buffalo, Rochester & Pittsburgh and the Canadian National, for movement to points on the latter from Cobourg, Ont. A substantial tonnage of coal is turned over to the New York Central at Maplewood, just south of Rochester, for movement eastward to northern New York and New England points, or given to the same carrier at Clearfield, Pa., for movement via Williamsport to points on the Reading and Jersey Central. Some coal moves to Buffalo for local industry or for movement via Black Rock to Canadian points.

The Buffalo, Rochester & Pittsburgh at times has a sizeable traffic in iron ore moving from Buffalo to the Pittsburgh district, which gives it the advantage of a back haul in equipment otherwise returning to the coal districts empty. Manufactures normally constitute about 15 per cent of the road's total revenue tonnage. On its 1923 traffic, which was more nearly normal than was traffic in 1924, the road had an average haul of 158 miles and its revenue per ton-mile was 0.87 cents.

Physical Characteristics

The Buffalo, Rochester & Pittsburgh is a road of very high physical standards. Its main line is laid with 100 lb. rail. Practically 100 per cent of the main line track has tie plates. The ballast is cinders, stone or slag. About



The Delaware & Hudson and the Buffalo, Rochester & Pittsburgh Do Not Connect

railway mergers, this news came out unexpectedly without previous intimation that negotiations were under way. The significance of the acquisition of the Buffalo, Rochester & Pittsburgh by the Delaware & Hudson is not clear at this time—particularly in view of the fact that the two properties do not connect but are, rather, more than 150 miles apart. The purport of the lease is apparently much the same as that of the recent announcement of the Norfolk & Western's proposal to lease the Virginian. Both leases represent opposition to the so-called four-system plan formulated last fall by the executives of three of the leading eastern systems for the consolidation of the carriers in the eastern district. Samuel Rea, president of the Pennsylvania, took part in the negotiations relative to this four-system plan but opposed the conclusions that were reached. The lease of the Virginian by the Norfolk & Western is understood to have been undertaken as a practical means of opposition to the plan on the part of the Pennsylvania, which has a large interest in the stock

75 to 80 per cent of the main line and 65 per cent of all track has creosoted ties. The line from Punxsutawney, north to both Buffalo and Rochester, much of it double track, has automatic block signals. Telephone dispatching is used throughout. The road handles a fair amount of passenger business and steel equipment is used throughout for that service.

BUFFALO, ROCHESTER & PITTSBURGH—REVENUES AND EXPENSES, SELECTED ITEMS

	1924	1923	Increase or decrease
Coal freight revenues.....	\$6,625,101	\$11,285,452	—\$4,660,351
Total freight revenues.....	13,575,578	19,310,382	—\$5,734,804
Passenger revenues.....	1,628,372	1,762,856	134,484
Total operating revenues.....	15,951,853	22,024,651	—6,072,797
Maintenance of way.....	1,713,591	3,913,515	—2,199,924
Maintenance of equipment.....	4,683,447	7,079,622	—2,396,176
Transportation.....	6,240,218	8,433,139	—2,192,921
Total operating expenses.....	13,451,122	20,175,269	—6,724,146
Net operating revenue.....	2,500,731	1,849,382	651,349
Taxes.....	407,000	401,023	5,977
Hire of freight cars, credit balance.....	618,001	1,592,104	—974,103
Gross income.....	3,128,230	3,563,775	—435,545
Deductions from gross income.....	2,506,347	2,483,277	24,070
Net corporate income.....	621,883	1,081,499	—459,615
Dividends.....	780,000	780,000	.....

Low Earnings Due to Coal Situation

At the present time the Buffalo, Rochester & Pittsburgh is suffering from the situation ruling in the union coal fields. The situation with reference to its coal traffic is best shown by the fact that the coal tonnage in 1924 was 42 per cent less than that of 1923. The result of this was that whereas in 1923 the company had a net after charges of \$1,081,499, in 1924 its net was only \$621,883. The standard return for operations of the property during the period of federal control—the annual average net railway operating income for the three years ended June 30, 1917—was \$3,276,410. In 1923, the net railway operating income was \$2,985,651. The net railway operating income in 1924 was \$2,641,407, equivalent to 81 per cent of the standard return. The 1923 net operating income was equivalent to a return on the property investment, inclusive of materials and supplies and cash, of 4.0 per cent.

The company had outstanding on December 31, 1924, \$36,820,047 funded debt and interest on funded debt in 1924 totaled \$1,689,998. There was outstanding on the same date \$6,000,000 preferred stock paying 6 per cent dividends and \$10,500,000 common stock which, in 1924, received 4 per cent dividends. Directors deferred the dividends on the common stock at their meeting in January of the present year. The dividends paid in 1924 totaled \$360,000 on the preferred and \$420,000 on the common, making a total of \$780,000. The 6 per cent dividends on both issues which the Delaware & Hudson agrees to pay under the terms of the proposed lease, would total \$990,000. The price that the Delaware & Hudson has had to pay for its lease of the Buffalo, Rochester & Pittsburgh is thus seen to be high. However, earnings of the property have been sufficient to have covered dividends at the 6 per cent rate on both issues in the past several years, except in 1921, 1922 and 1924. The fly in the ointment, of course, is the coal situation and the lack of earning power of the Buffalo, Rochester & Pittsburgh at this time while the handicaps on the union coal mines are so severe. Apparently Mr. Loree feels that these adverse conditions cannot last indefinitely without remedy of some kind.

The Delaware & Hudson operates a total of 918 miles of line, 112 of which are operated under trackage rights. These totals do not include the two lines in Canada, namely, the Napierville Junction, which extends from the Canadian border north to Montreal, and the Quebec, Montreal & Southern, extending from Montreal eastward towards Quebec, paralleling the St. Lawrence on the south, in connection with which latter line there is also

a line south to the border. The Delaware & Hudson's main line extends from Albany to Binghamton, N. Y. (with an extension to Owego by trackage rights over the Erie), and from Albany north to Rouses Point, N. Y., on the border, and there are numerous branches. Over one-half of the road's revenue tonnage is anthracite coal and this traffic supplies about 50 per cent of the total operating revenues. This coal is secured in an area lying between Carbondale and Wilkes-Barre, the connection to the lines in the coal fields being reached by trackage rights over a line of the Erie. A large proportion of the coal moves to New England, being turned over to the Boston & Maine at Mechanicville, N. Y.

The Delaware & Hudson pays 9 per cent on its capital stock. In 1923, its net after charges was equivalent to \$11.08 a share on the stock and in 1924 to \$13.69. The road had a standard return for operation during federal control of \$7,409,600. In 1923, its net railway operating income was \$6,512,344 and in 1924 \$7,431,880. The 1923 net operating income was equivalent to 5.1 per cent on the company's property investment inclusive of materials and supplies and cash.

Purpose of the Acquisition Not Clear

There is no particularly useful purpose in seeking to determine what operating advantages may accrue to either the Delaware & Hudson or the Buffalo, Rochester & Pittsburgh through the lease of the one by the other. The two properties have very little in common from a traffic viewpoint. This is indicated most particularly by the fact that the two lines are 150 miles apart. Thus, between Binghamton on the D. & H. and B. R. & P. Junction, the distance between the two properties via the main line of the Lackawanna is 158 miles. Between Wilkes-Barre on the D. & H. and P. & L. Junction via the main line of the Lehigh Valley, the distance is 218 miles.

The apparent explanation of the step that the Delaware & Hudson has taken is to be found to lie more likely in a renaissance of railway strategy resulting from the more general problems of railway consolidations. Thus, in the consolidation hearings before the Interstate Commerce Commission in 1923 no less than four systems expressed their desire to have the Buffalo, Rochester & Pittsburgh. Control of the Buffalo, Rochester & Pittsburgh has been very closely held by the Iselin interests, who incidentally also have large holdings of coal properties in the area served by the Buffalo, Rochester & Pittsburgh. There have been rumors that offers have been made to the Iselins for their railroad property by two of the large carriers with which they connect, but that the price offered was not high enough to be attractive. This explains readily why the Delaware & Hudson may have had to pay what some may consider a high price for its new acquisition.

In the so-called four-system plan for consolidating the roads in the eastern district, the Buffalo, Rochester & Pittsburgh was assigned to the New York Central. In the public announcements of this plan no mention was made of the Delaware & Hudson although it is reported that it was planned to have that property remain independent or possibly be owned jointly by the other systems. Furthermore, no mention was made of the Wheeling & Lake Erie, of which Mr. Loree is a director, or of the Wabash. W. H. Williams, chairman of the board of directors of the Wabash, is also vice-president of the Delaware & Hudson, and it would appear that the three properties would work in harmony in negotiations of this kind. What has happened now is that Mr. Loree has apparently gone his associates one better. It is very

unlikely that any further negotiations relative to general consolidation of carriers in the eastern district will be conducted without Mr. Loree being seated at the council table.

What further plan Mr. Loree may have for the future is a question. Mr. Loree refuses naturally to divulge what he may have in mind. He is said to have proposed the formation of a new system constituting the Wabash, the Delaware & Hudson, the Lackawanna, the Lehigh Valley, the Wheeling & Lake Erie, etc., to connect up possibly with a grouping of lines embodying the Kansas City Southern and the Missouri-Kansas-Texas with both of which the Wabash connects at Kansas City and with the latter also at St. Louis. Mr. Loree is chairman of the board of the Kansas City Southern and he was recently made a director of the Katy, an interest in which has recently been acquired by the Kansas City Southern. Whether any closer union of the Wabash with the Missouri Pacific—both of which properties are headed by Mr. Williams as chairman of the board—is in mind is another question. The situation offers room for all kinds of possibilities but the most important factor in it is the strategic position of both Mr. Loree and Mr. Williams. It has been many years since the strategy of great railroads seems so much to the fore as at the present time.

Heated Controversy Over C. N. R. Debt.

W. L. MACKENZIE KING, Prime Minister of Canada, and Arthur Meighen, leader of the Opposition in the Canadian Parliament, both made important statements on the position of the Canadian National, when debating the budget on Thursday of last week. Referring to certain returns which had been tabled in the House by the Minister of Railways and Canals showing the additions to the funded and unfunded debt of the railway Mr. Meighen, in his speech, said:

These figures show an increase in the three years, not taking into account these latter three months, of \$294,000,000. That is the increase of public debt and of government debt both. That period is from 1921 to 1924. At the end of last March (1925) the total railway debt due the public was \$931,913,082. Deducting the debt due to the public, \$755,115,592, on December 31, 1921, when this government took office, we find the increase in our debt as denominated, Canadian National Railways, \$176,796,490. This is the increase in the one account, the increase in the other account is \$64,625,860, and the two together make a total on both accounts of \$241,423,350. Nor does this represent the total increase in the debt from December, 1921. To arrive at these figures there is included the \$4,000,162 that has been added this year on account of the debt of Greece and Roumania. There was included as well some \$8,199,333.31 last year and \$8,938,260 the year before which were rightly taken in as an asset, but which were just as much our assets five years ago as they are today—exchange adjusted as due us by the British government; and a similar amount the year before. I am not complaining at least in the case of the latter two items being included in our estimates to get at our right debt now, but what I say is that we cannot fool ourselves by thinking we are that much better off than we were. We are just exactly in the same position. They were our property then as they are now. Adding these, the debt that we have gone into since this government took office, after all refunding is allowed for, is \$262,561,105.

What is the significance of all these returns? Has this House been prepared for the fact, which is admitted even in the report of the Minister of Railways, that in the three years, irrespective of what has taken place in the last three months, the National Railway debt to the public and the government increased by more than \$294,000,000? Is it prepared for the fact, which nobody disputes, that, adding the last three months, it is now, according to the minister, about \$312,000,000—or, according to the reports of the companies, about \$327,000,000—more than it was just at the end of December, 1921? The increase to the public is colossal in any event; the increase in both is still worse. We have been supplied all along with data as to how the operating account was

running. We were told through the year 1923: "It is improving." The operating account was improving. We were told through the year 1924: "It is getting worse." It was getting worse. But the operating account discloses only a mere fraction of the whole truth as to the National Railways and the real position we are in today.

Never under the conditions of these last three years was this country justified in putting \$327,000,000 more into the National Railways; even if you assume—which I will not—that the money is now represented by tangible assets, the policy was not the right one. We already had over \$1,100,000,000 in that road and today we have \$1,492,000,000. And of that, \$327,000,000 has been put into the railways since this government came into power. These figures, I say, are staggering; they have staggered the people of Canada.

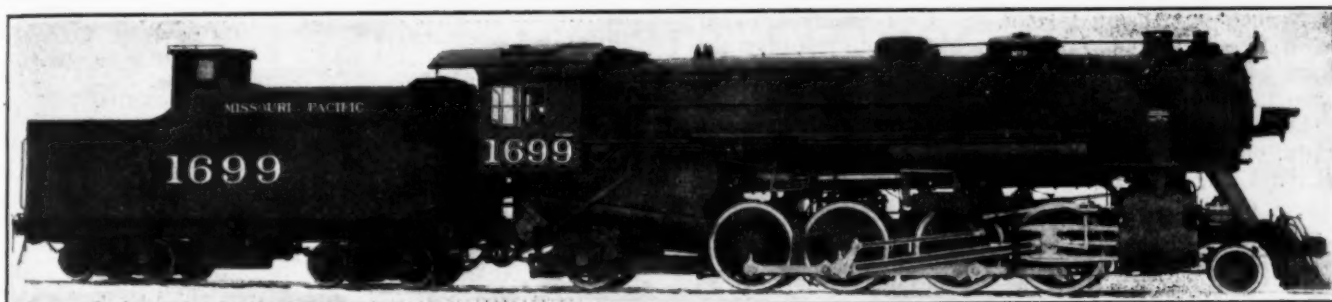
Premier King, replying to Mr. Meighen, said in part:

First of all, I would ask the honorable gentleman: Who was responsible for having the Grand Trunk railway system being made a charge upon this country? Who brought into being the National railway system as we have it at the present time, or rather not as we have it at the present time, because this government has organized by legislation efficiency out of the chaos left by the previous administration? Honorable gentlemen opposite were the ones who, by act of parliament, decided that this bankrupt railway system should not be allowed, as has been done frequently in the United States, to go into liquidation, but instead should be bought at a particular price in the condition it was in and made part of the National system. It is very fine for my right honorable friend and his friends to turn round now and try to indict this government and this party for enormous expenditures which, he says, should not have been added to the debt of this country, when as a matter of fact we have had no responsibility whatever in the initiation of that policy. We have a responsibility in the matter of carrying on the control of the railways, and I shall endeavor to show, as I continue to speak, how we have sought to discharge that responsibility and what we have done in that connection. It will reflect very favorably, I can assure the House, as compared with the methods of my right honorable friend during the short time he had control.

The point I wish to make here is that the National Railways were turned over to the government, and when this was done, the government had to decide upon one of two policies. I am going to submit this to the fairness of the honorable members of the House and of the country. The two policies that were possible in connection with this vast railway system were: Either to administer the system as a part of the government business of the country under the control of a minister of the crown who would be responsible for everything that was done, who would have the complete direction and control and who would have to give an accounting to the country; or to take the National railway system entirely out of the control of politics and entrust it to a president, board and a set of officers, who would be assured that they would be given a free hand and that there would be no political control at all from the government's point of view. Those are the only possible alternatives. We adopted the latter, believing that that was most in accord with public opinion, that it would give, as nothing else possible could give, a fair chance to the National Railways to show whether they would pay or not. But I ask honorable members: Having done that, having parted with control, in deference to public opinion, and I might say, in accordance with the unanimous wish of this House, are we to be held responsible and the government blamed for all the expenditures, all the debts, all the difficulties that arise in connection with the National Railways? If we are to have responsibility, then we must have control; but if we have not control, we cannot be held responsible at the same time for the methods or consequences of administration.

I think the country is pretty well satisfied, despite whatever my right honorable friend may say about Sir Henry Thornton or the gentlemen who surround him, that Sir Henry Thornton was the ablest executive it would have been possible to find anywhere. If the roads can be made to pay at all, they can be made to pay better under his direction and guiding genius than under the direction and guiding genius of any other person these gentlemen can name. The government will take the responsibility for the appointment of Sir Henry Thornton.

THE METROPOLITAN TRACK SUPERVISORS' CLUB will hold its annual meeting on June 4, making it a combined outing and business meeting for the members and their families. The program for the day will include a boat ride, up the Hudson river to Bear Mountain, and an inspection of the, recently completed highway suspension bridge at this point. The luncheon and business meeting will be held at the inn at Bear Mountain, the party returning by boat to New York.



Three-Cylinder Locomotive Built for the Missouri Pacific by the American Locomotive Company

Three-Cylinder Locomotive for the Missouri Pacific

2-8-2 type for freight service designed to develop high tractive force and efficiency

THE Missouri Pacific has recently added to its equipment a three-cylinder Mikado type locomotive built by the American Locomotive Company. This locomotive, which was purchased principally for experimental purposes, develops a rated tractive force of 65,700 lb. and has 23-in. by 32-in. outside cylinders and a 23-in. by 28-in. inside cylinder. The total weight is 340,000 lb., with 244,500 lb. on the drivers, which are 63 in. in diameter. Compared to the three-cylinder Lehigh Valley locomotive No. 5000*, which is a 4-8-2 type with 69-in. drivers. It has 1.5 per cent greater tractive force and is 29,000 lb. lighter.

An interesting feature of this design, as well as that of other three-cylinder locomotives that have been built recently, is the low factor of adhesion, which is 3.72. This, of course, means a much greater tractive effort per unit of weight than is possible with locomotives of the two-cylinder type.

Among the special features incorporated in the design of the Missouri Pacific locomotive are the Alco reverse gear, Elvin stoker, Franklin grate shaker and adjustable driving box wedges, Chicago flange lubricators and Mudge Security spark arrestor.

Boiler

The boiler is of the conical type and is equipped with Nicholson syphons, type A superheater, and Harter circulating plates. This circulating device consists essentially of a horizontal plate which is placed slightly below the center line and extends across the boiler from a point just behind the feed-water inlet to within about 6 in. of the back tube sheet. The first course of the boiler is 88 in. and the largest course is 92-15/16 in. in diameter. There are 199, 2¼-in. tubes and 45, 5½-in. flues, 19 ft. long, which give a combined heating surface of 3,437 sq. ft. This heating surface combined with the 268 sq. ft. of the firebox and combustion chamber, 14 sq. ft., and 67 sq. ft. for the arch tubes and syphon respectively, gives a total evaporating surface of 3,786 sq. ft. The steam pressure is 200 lb. per sq. in. The estimated horsepower of the boiler is 2,498 lb., which is 87.4 per cent of the cylinder horsepower.

*For a description of this locomotive, see the *Railway Age*, March 15, 1924, and June 14, 1924.

The Chambers front end throttle, from which the branch pipes extend down on the inside of the smokebox to the cylinders, is placed in the upper section of the front-end, in front of the stack.

Referring to the side and front elevation drawings of the locomotive, the smokebox is constructed with a flat bottom 54¼ in. wide which rests on the cylinder saddle. This design permits a somewhat heavier construction of the cylinder casting around the inside cylinder. The cylinders are cast in two parts, with the division between the inside cylinder and the left-hand outside cylinder. The inside cylinder is elevated and inclined to permit the inside main rod to pass over the front and front intermediate driving axles. The front intermediate driving axle is offset 5¼ in. at the center so as to provide clearance for the inside main rod.

The cylinder casting provides an entirely separate steam chest for each valve, an arrangement which ensures proper lubrication of all the valves and pistons. The exhaust passages lead to a common exhaust pipe of the annular type, which is fitted with a nozzle 6¼ in. inside diameter.

The firebox is of Lukens steel and is equipped with a Commonwealth ashpan. It has a total evaporating surface, including the arch tubes, syphons and combustion chamber, of 349 sq. ft., which is 9.22 per cent of the total evaporative heating surface. Compared to the area of the grates, the total heating surface of the firebox is 5.23 times larger than the grate area, which is 66.8 sq. ft.

Engine and Running Gear

The cylinders and steam chest are fitted with Hunt-Spiller bushings. This material is also used for the valve packing rings and the piston bull rings and packing rings. The piston heads are of cast steel and the piston rods, main and side rods are of carbon vanadium steel. The main driving boxes are equipped with Franklin adjustable wedges and all the shoes and wedges are made of bronze, specified by the railroad. Floating bushings are provided for the outside main rods and middle connection.

The Walschaert valve motion is used to operate all three piston valves. This is accomplished by a lever transmission located in front of the cylinder and connected directly to the valves. The cylinders are lubricated by

the Nathan lubricating system. A Unit Safety drawbar and wedge type radial buffer are used to connect the engine and tender. The swinging pipe connections have Barco joints.

The air brake is the Westinghouse No. 6-ET with two 8½-in. cross-compound air compressors mounted on the left hand side of the boiler.

Tender

The tender is the U-shape, level top type, and is carried on two four-wheel trucks. The tank has a capacity of 10,000 gal. of water and 14 tons of coal. A cab for the trainman has also been provided, which is located on top of the tank directly behind the coal bunker.

Additional information relative to this locomotive is given in the table of dimensions, weights and proportions.

TABLE OF DIMENSIONS, WEIGHTS AND PROPORTIONS OF MISSOURI PACIFIC LOCOMOTIVE No. 1699

Builder	Amer'n Locomotive Co.
Type of locomotive.....	2-8-2
Service	Freight
Cylinders	Inside, 23 in. by 28 in.
Cylinders	Outside, 23 in. by 32 in.
Valve gear, type.....	Walschaert
Weights in working order:	
On drivers.....	244,500 lb.
On front truck.....	34,500 lb.
On trailing truck.....	61,000 lb.
Total engine.....	340,000 lb.
Tender	190,100 lb.
Wheel bases:	
Driving	17 ft. 10 in.
Total engine.....	37 ft. 5 in.
Total engine and tender.....	72 ft. 3½ in.
Wheels, diameter outside tires:	
Driving	63 in.
Front truck.....	33 in.
Trailing truck.....	43 in.
Boiler:	
Type	Conical
Steam pressure.....	200 lb.

Fuel	Bitu. coal
Diameter, first ring, inside.....	88 in.
Firebox, length and width.....	114¼ in. by 84½ in.
Combustion chamber, length.....	33 in.
Tubes, number and diameter.....	199—2¼ in.
Flues, number and diameter.....	45—5½ in.
Length over tube sheets.....	19 ft.
Grate area.....	66.8 sq. ft.

Heating surfaces:

Firebox and comb. chamber.....	268 sq. ft.
Arch tubes.....	14 sq. ft.
Syphons	67 sq. ft.
Tubes	2,214 sq. ft.
Flues	1,223 sq. ft.
Total evaporative.....	3,786 sq. ft.
Superheating	1,051 sq. ft.
Comb. evaporative and superheating.....	4,837 sq. ft.

Special equipment:

Brick arch.....	Alco.
Superheater	Type "A"
Stoker	Elvin

Tender:

Water capacity.....	10,000 gals.
Fuel capacity.....	14 ton

General data, estimated:

Rated tractive force, 85 per cent.....	65,700
Cylinder horsepower (Cole).....	2,856
Boiler horsepower (Cole) (est.).....	2,498
Speed at 1,000 ft. per min. piston speed.....	49.6 m.p.h.

Weight proportions:

Weight on drivers ÷ total weight engine, per cent.	72
Weight on drivers ÷ tractive force.....	3.73
Total weight engine ÷ cylinder hp.....	119.2

Boiler proportions:

Boiler hp. ÷ cylinder hp., per cent.....	87.4
Comb. heat. surface ÷ cylinder hp.....	1.69
Tractive force ÷ comb. heat. surface.....	13.6
Tractive force × dia. drivers ÷ comb. heat. surface.....	857
Cylinder hp. ÷ grate area.....	4.27
Firebox (total) heat. surface ÷ grate area.....	5.23
Firebox (total) heat. surface, per cent of evap. heat. surface.....	9.22
Superheat. surface, per cent of evap. heat. surface	27.8



Arlberg Line, Austrian Federal Railways, with Wiesburg Castl (Built in 1300) in the Background

Fixed Plan Hinders Consolidation*

Government should induce, not drive, railroads to form consolidations economically justifiable

By Mark W. Potter

Former Interstate Commerce Commissioner

I AM OUT of tune with the present provisions of the Interstate Commerce Act regarding consolidations. I am in favor of consolidations along the *lines of principle* embodied in the existing interstate commerce act. I am sure the effect of such consolidations will be beneficial. I think that, generally speaking, the railways are anxious and ready to go ahead and consolidate. The present law is preventing desirable consolidations. Any law which requires the promulgation of a "complete plan" will block them.

For a long time many thought that the present law absolutely prohibited consolidations. That held up consolidations for about three years after the law was enacted, the thought being that the present law so froze the situation that no consolidations could take place even when state laws permitted them until a complete plan was promulgated. After three years of discussion and controversy, the commission, in the Nickel Plate case, adopted the contrary view by a majority of one; and we authorized the issuance of securities to carry out a plan of consolidation, although the complete plan had not been promulgated. If the majority had not taken this view, the Nickel Plate could not have been consolidated, and the country would have been deprived of the activity of men like the Van Sweringens of Cleveland, Ohio, and their associates, who, in my judgment, today constitute a most constructive influence toward reshaping the railroad map through consolidations.

Arbitrary Fixed Plan Not Feasible

I do not believe at all in the promulgation of a complete plan. I think it is the one thing that ought not to be done. It will serve and has served to create difficulties, construct obstacles, cause friction, excite opposition, and, worse than all, prevent handling the situation in the practical, business-like manner which is needed to bring about consolidations. It is about as inappropriate for successful accomplishment as a blacksmith's tools would be to repair a watch, or as a dump cart would be to carry the driver in a horse race. What is needed is not machinery, but freedom from machinery. The principles which the Transportation Act establishes regarding consolidations are all right. The carriers should be allowed to go ahead and consolidate in accordance with those principles, subject only to the approval of the commission. If they were thus given their heads, I am sure the railroads would promptly accomplish much in the way of consolidations to the satisfaction of the carriers and the public, and with the beneficial effects which constitute the aim and desire of us all.

What is desired is to bring about consolidations so as to preserve competition, create systems of balanced strength and efficiency, improve service, promote economy, stabilize credit, avoid disturbance, allay anxiety, facilitate the flow of new funds from private sources, and encourage efficient and economical management and operation under proper government supervision and regulation. The idea is to *induce* the carriers to consolidate volun-

tarily, so that they will do it without resort to compulsory methods that would cause delay and perhaps be futile. Obviously, the simpler and more expeditious the means to these ends, the better.

The unfortunate tendencies of the times in almost everything are towards too much elaboration and machinery. Railways would have consolidated years ago if they had not been prevented by law. Now it is realized that restraining laws were a mistake, and it is desired to grant carriers relief and give them encouragement. Still, apparently the government is not willing to give the desires of the carriers much weight, and seemingly what it wants is to get them in a straight-jacket and have all the planning done by a government agency.

The mere promulgation of a plan will get nowhere. Hundreds of thousands of dollars and nearly four years have been expended trying to devise a plan as though that in itself would be a great accomplishment. What is wanted is not a plan but consolidations.

For a long time I entertained the notion that the promulgation of a complete plan would be helpful. There was too much assumption in this notion. I had not thought it through and was not in touch with the thought of those who had. I am now convinced that I was wrong. We had a very illuminating hearing on consolidations before the commission recently. It was the first opportunity that had been presented to most of us to hear from the carriers generally. There was general representation, and the argument revolved around our tentative plan. It had no friends. It was condemned and repudiated as unsound and impossible by practically every carrier and by representatives of one faction or another, in every section of the country between the Atlantic and Pacific, Canada and the Gulf.

It is certain that if the tentative plan were to be adopted as the complete plan, the opposition, both of carriers and the public, would prevent its adoption in any considerable part. If we discard it and guess again, I am not hopeful that the result will be any more satisfactory. Those now on the commission who favored the adoption of the tentative plan when it was adopted constitute less than a majority of the commission. It is hardly conceivable that the commission will be unanimous or anything like it in adopting any plan. I think it is more than likely that, if a plan is adopted, it will be adopted by a majority of not more than one or two votes, because necessarily there are so many differences of opinion on this subject. It seems to me it will be unwise to force any plan so adopted on to reluctant carriers and security holders.

The law, in my judgment, should do little more than announce a policy of consolidation in harmony with the general principles of the present law. Having made the law thus elastic, I would add a direction to the commission to report at the end of a period what had been done during the period in the way of consolidations, and what additional consolidations are desirable and what steps should be taken to accomplish them.

I am inclined to think it would be well to authorize the commission to designate from its members one or

* From an article in *The Nation's Business*.

more commissioners to participate with the carriers in different sections to assist them and stimulate the working out of consolidation programs.

While I am convinced that it will be impossible for the commission to put out a sound or workable plan, I am convinced also that, if we were to put out a sound plan, the mere putting out of such a plan would bring about situations which would prevent its being put into effect. The railways cannot be consolidated merely by considering them as properties. Their financial and corporate set-up, the manner in which their securities are owned, the selling prices of their securities, the effect of consolidations upon the various lines, the advantages to be derived by certain lines from the standpoint of the recapture of earnings, etc., must all be considered in working out a sound, attractive plan. It must be attractive as well as sound, or it will not be adopted.

I understand the commission feels that it must have as a basis for what it does a formal record. We have taken, I think, thirty or forty thousand pages of testimony. No commissioner, other than Commissioner Hall, will thoroughly understand it. It contains a lot of valuable information. It does not contain the information which seems to me to be most essential to a sound solution or working out of consolidation plans. It does not show the attitude of mind of the railway executives, security holders or bankers. There is not a railway executive in the land who would testify without reserve as to what is in the back of his head or as to what are the considerations that would control him as a practical railroad man. Any executive who did so would thereby lay his property open to serious attack by competing carriers. Furthermore, if there were a full and frank statement by executives as to what they wanted, and if a plan were to be worked out and promulgated by us to that end, security values would so enhance that acquisition and consolidations, except at exorbitant prices, hostile to the public, would be utterly impossible.

The assumption is that valuation is necessary in order to determine the amount of securities allowable. As a matter of fact, it does not make much difference what is done in the matter of capitalization so long as increases of capitalization are not permitted. It would even be unwise to attempt to reduce capitalization, for the effect of such an attempt would be most disturbing in the financial world. In view of the rate-making scheme to determine rates by *property* values, it does not make much difference whether outstanding securities are a few hundred million more or less. On the contrary, it would be most unwise to force reduction for the reasons stated. The result of consolidations, if the carriers were allowed to go ahead in the ordinary course, would be to reduce very materially the amount of outstanding securities as conditions would be traded out.

Generally speaking, consolidations would be brought about by the absorption of weak lines by strong lines and the exchange of high for low-priced stock. In this way effect being given to market value of securities, the result would be to reduce outstanding securities. If carriers were at liberty to go ahead and quietly plan their consolidations and pick up the necessary securities, with perhaps some co-operation by us, without making the plan public, the task would be much easier and would be accomplished in a way much more satisfactory to the public, economically, than otherwise. If we were to put out a plan assigning weak lines to strong, and if it were known that such a consolidation was to take place, securities of weak lines would soar in market value and difficulties and unsoundness of result would be correspondingly increased.

The reorganization or readjustment scheme involving

financial set-up and security issues should at the same time be worked out for a given territory. The problems should be approached somewhat from a trading point of view. Sweet must be used to carry bitter. There is something that every carrier wants, and something it does not want. If it can get what it wants only upon condition that it does something it would rather not do, it will fall in line. If it gets what it wants under a plan promulgated by us, it will refuse to fall in line and help out at other points. Take for illustration the situation between the Mississippi and the Hudson, the Ohio and the Potomac, and the Great Lakes. Suppose it were desired to establish evenly balanced systems which would reach Chicago, Peoria, gateways of the Mississippi, the Ohio and the Great Lakes, and New York, Philadelphia, and Chesapeake Bay. Ideal results could be accomplished with, say four systems, all of which, given trackage rights over certain stretches, and certain terminal privileges, could reach all of the points mentioned. They would furnish everything wanted in the way of competition, financial strength, and opportunity to render service.

To establish those systems considerable in the way of giving and taking would be required. If we were to announce such a plan as that suggested for these systems, the mere announcement of the plan would be certain to make it impossible to set the systems up. If, on the other hand, the situation could be approached outside of a plan and outside of a record, in a practical, business-like way, with perhaps the assistance of some governmental agency; and more or less of a trading attitude were adopted, the systems could be created quickly without any shock to the financial world or to security holders, and without antagonizing communities or causing any discontent.

The complete plan should be abandoned. We should not confine ourselves to a record. We should go outside of the record and use it only as information. Someone should get hold of the representatives of the railways in a practical, business-like way, and trade out all of the situations, including security issues. After this had been done, it might be all right to put out a plan at the *last step*. A plan thus put out would be enthusiastically commended by everybody, carriers, shippers, and security holders, and be promptly adopted, accomplishing all you want to accomplish and all everybody else wants to accomplish and win the commendation of everyone for proceeding in a practical, business-like and sound manner, and getting real benefits quickly.

I have had conferences with important executives, and find they are willing to talk to an individual with far greater freedom than they will to the public, which would permit their position to be used to block them and hold them up. If the complete plan idea is scrapped and the commission can properly organize its activity a lot of consolidations of the right sort can be put through in a hurry.

The present situation, noting in connection therewith condition of public sentiment, presents a favorable opportunity for ironing out the railway map in a constructive way which will be of great benefit to the public interest and all concerned. This work cannot be done soundly except through the utilization of the skill and positions of the railways, meaning by railways their executives, security holders, and bankers. They can do it if they will approach the subject with that sense of responsibility which will keep foremost in their minds what the public interest and the interest of all carriers require. It is the duty of all, whatever their primary interest may be, to take this broad view. There is the ultimate adjustment which, being best for all, will be best for each carrier. The paramount duty of all is to find, accept and consummate this sound adjustment.

General News Department

The Chicago & North Western has made a temporary reduction of 50 per cent in its mechanical department forces.

"Economics of Terminal Improvements"

A discussion of the economics of terminal improvements will be presented by L. E. Dale, division engineer, Pennsylvania System, before the Society of Terminal Engineers, on Tuesday evening, May 12, at the United Engineering Societies Building, New York.

The C. P. R. in March

Following are the gross earnings, working expenses and net profits for the month of March of the Canadian Pacific and for the three months ending with March, with comparison:

March	1925	1924	Decrease
Gross	\$12,931,546	\$14,812,927	\$1,881,380
Working expenses	10,814,334	12,302,128	1,487,794
Net prof.....	\$2,117,212	\$2,510,798	\$393,586
First quarter	1925	1924	Decrease
Gross	\$36,614,770	\$41,288,482	\$4,673,711
Working expenses	32,759,089	36,839,434	4,080,345
Net prof.....	\$3,855,681	\$4,449,048	\$593,366

Grand Trunk Officers Allowed to Retain Gratuities

Officers of the former Grand Trunk have not returned the gratuities given them by the former management of that road before it was absorbed into the Canadian National, according to a statement in the House of Commons at Ottawa by the Minister of Railways and Canals, in answer to a question. The Minister stated that a commission named two years ago to inquire into the matter had found that the payments were all legally made, and the former management had a perfect right to make them. He did not think it would be in the interests of the Canadian National to insist upon the repayment of those gratuities. Mr. Meighen asked if this was the attitude of the present federal government, and the Prime Minister stated that it was.

Provincial Taxation of the C. N. R.

Following a conference in Fredericton, N. B., between Premier P. J. Veniot of that province and Gerald G. Ruel, vice-president and general counsel for the Canadian National, it was announced that the taxation of the Canadian National by the province of New Brunswick would probably become effective this year. A system of taxation on a mileage basis will be inaugurated which will mean practically an extension to the Canadian National of the basis upon which the Canadian Pacific is now taxed in New Brunswick. The Canadian Pacific pays over \$50,000 a year, and on a mileage basis it is expected that the Canadian National will pay over \$100,000 a year. A similar scheme of taxing the Canadian National lines is likely to be put into effect in the other provinces of the Dominion.

Annual Meeting of the A. S. T. M.

The annual meeting of the American Society for Testing Materials will be held June 23-26 at the Hotel Chalfonte-Haddon Hall, Atlantic City, N. J. Committee meetings will be held on Monday and Tuesday, the regular program opening on the evening of the latter day. The program includes double sessions on the last three days. The day's sessions and subjects are as follows: Tuesday, wrought iron, cast iron and corrosion; Wednesday, non-ferrous metals, metallography, ceramics, coal, timber, rubber, slate, presidential address and reports of administrative committees; Thursday, steel and fatigue of metals, road materials, waterproofing, roofing materials, research, testing, nomenclature and specifications; and Friday, paints, textiles, petroleum products, insulating material, cement, lime, gypsum and concrete.

More Discussion on Hudson Bay Railway

After an entire day's debate the old question of the completion of the Hudson Bay Railway which was before the Canadian House of Commons this week was temporarily terminated by an announcement from Hon. George P. Graham, Minister of Railways and Canals, that there is an item in this year's estimates of \$200,000 to complete the repairs to that last section of the railway. "Hon. members of this House who are great friends of public ownership," added Mr. Graham, "must remember that under the new arrangement every dollar expended on the Hudson Bay Railway henceforth will not be charged against the consolidated revenue of Canada but against the Canadian National Railways on which interest must be paid. We must therefore go no more rapidly in these things than can be defended from the point of view of the Canadian National Railways, as well as from the standpoint of the people of Canada."

Superintendents' Convention

The American Association of Railroad Superintendents will hold its annual convention at Richmond, Va., on June 16-19. The Big Four and the Chesapeake & Ohio will provide a special train of sleeping and dining cars leaving St. Louis about 10:30 on Sunday morning, June 14, and Cincinnati at 11:30 that evening, arriving at Richmond at five o'clock the following evening. The Jefferson Hotel has been selected as convention headquarters. Morning and afternoon sessions will convene at 9 a. m. and 1:30 p. m., respectively. In addition to reports on a large number of operating subjects, addresses will be presented by R. N. Begien, vice-president of the Chesapeake & Ohio; M. J. Gormley, chairman of the Car Service Division, American Railway Association; and E. T. Horn, chief of yard and terminal operations, Baltimore & Ohio. Following adjournment on Friday afternoon, the Chesapeake & Ohio will provide a special train to take the members to Newport News for an inspection of the harbor and terminals at Hampton Roads.

C. N. R. Executives Before Parliamentary Committee

There is little prospect of any electrification of the main line of the Canadian National for some time, according to statements made last week at Ottawa before the House Committee on National Railways and Shipping by officials of the road. "Our investigations have been continued to some considerable extent," said R. A. C. Henry, of the Canadian National, to Sir Henry Drayton, a member of the committee, "but, generally speaking, it may be safe to say that, with the exception of a very few segments of the line, there is not sufficient density of traffic to justify electrification, as based on the present cost of power." Later he stated that the only part of the main line that would be worth while electrifying at this stage is that between Toronto and Hamilton.

Asked by what route the Toronto Eastern Railway would enter Toronto from Oshawa (about 35 miles east of Toronto) Mr. Henry said that there were two alternative routes and at present the north route was preferable, "but with respect to the type of construction and equipment, whether it be an electric railway or a railway on which would be operated unit cars, it has not been decided. There is nothing in the estimate this year to provide for any further work on that line. There will eventually be an additional capital expenditure of \$1,000,000 on that line."

At a subsequent meeting of the committee there was a tilt between Sir Henry Drayton and Sir Henry Thornton, president of the Canadian National, in regard to salaries paid to various officers of the railways. Sir Henry Drayton wanted to know how much was being paid to Charles J. Smith, who was last Fall appointed European vice-president with headquarters in London. Sir Henry Drayton asked if Mr. Smith was getting \$25,000 a year and a house. "Where did you get that idea?" queried Sir Henry Thornton. "You certainly have a wonderful imagination."

Mr. Smith does not receive a house free." Then the head of the Canadian National system charged certain members of the House of Commons and of the Senate with asking questions about the management of the Canadian National so that they might have material out of which political capital could be made. He declared that the officers of the government road had the same right to privacy as they would were they employed by a private railway company. He said he was distinctly opposed to having the private affairs of his officers bandied about in public. Sir Henry Drayton said that two or three years ago publicity was given to the salaries and other details concerning officers on the United States lines of the C. N. R. "Yes, and a contemptible piece of business it was," added Sir Henry Thornton, "an utter disgrace."

Purchases and Stores Convention Program

The sixth annual meeting of Division VI of the American Railway Association—Purchases and Stores—of which A. W. Munster, purchasing agent, Boston & Maine, is chairman, C. D. Young, stores manager, Pennsylvania, vice-chairman and W. J. Farrell, 30 Vesey street, New York, secretary, will be held in the Hotel Chase, St. Louis, Mo., on May 19, 20 and 21, the sessions convening at 10 a. m. Central Standard time. The program is as follows:

TUESDAY, MAY 19 MORNING

Opening exercises.
Address by J. H. Waterman, superintendent timber preservation, Chicago, Burlington & Quincy.
Address by R. H. Aishton, president, American Railway Association.
Address by W. G. Besler, first vice-president, American Railway Association.
Address by chairman.
Report on Stores Department Book of Rules.
Report on Classification of Material.

AFTERNOON

Report on Recovery, Repairs and Reclamation of Discarded Material—Classification and Handling of Scrap.
Report on Standardization and Simplification of Store Stock.
Report on Control of Line Stocks.

WEDNESDAY, MAY 20

Address by W. J. Cunningham, James J. Hill, Professor of Transportation, Harvard University.
Report on Stationery and Printing.
Report on Forest Products.
Report on Stores Department Buildings and Facilities for Handling Materials.

THURSDAY, MAY 21

MORNING

Report on Supply Train Operation and Line Delivery of Materials.
Report on Unit Piling and Numerical Marking System.
Report on Purchasing Agents' Office Records and Office Organization.

AFTERNOON

Report on Material Accounting and Office Appliances.
Report on General Accounting.
Report on Store Delivery of Material to Users at Shops.
Report on Workable Rules for Carrying Out of the Provisions of Section 10—Clayton Anti-trust Act.
Report of Joint Committee on Fuel Conservation.
Report of Joint Committee on Joint Inspection of Standard Materials.
Election of Officers.

Revenues and Expenses for March

Operating revenues of the Class I railroads, having a total mileage of 236,550 miles, amounted to \$486,484,801 in March, according to reports filed with the Interstate Commerce Commission and compiled by the Bureau of Railway Economics. This was a decrease of \$18,886,586 or 3.7 per cent as compared with March last year. Operating expenses totaled \$377,265,486, a reduction of \$13,336,445 or 3.4 per cent, and the net railway operating income was \$73,116,672, a decrease of \$7,203,375.

Class I railroads for the first three months this year had a net railway operating income of \$203,881,770, which was at the annual rate of return of 4.48 per cent on property investment, as compared with \$203,348,527 or 4.61 per cent for the same period last year.

Earnings by districts for the first three months this year with the percentage of return based on property investment on an annual basis were as follows:

New England Region.....	\$8,737,171	5.69 per cent
Great Lakes Region.....	37,361,308	5.29
Central Eastern Region.....	39,396,784	4.47
Poconchos Region.....	13,868,659	6.73
Total Eastern District.....	99,363,922	5.10
Total Southern District.....	41,048,695	5.71
Northwestern Region.....	11,967,409	2.11
Central Western Region.....	31,427,733	3.65
Southwestern Region.....	20,074,011	4.39
Total Western District.....	63,469,153	3.36
United States	\$203,881,770	4.48 per cent

Twenty-eight Class I carriers operated at a loss in March, of which 8 were in the Eastern, 1 in the Southern and 19 in the Western districts. In February, 27 had operating deficits.

Class I carriers in March expended \$169,936,609 for maintenance, a decrease of nearly \$3,000,000 or 1.7 per cent as compared with March, 1924. Maintenance of way expenditures totaled \$61,090,200, an increase of \$1,486,400, while expenditures for maintenance of equipment totaled \$108,846,370, a decrease of \$4,459,900.

Carriers in the Eastern district had a net operating income in March of \$36,119,589, compared with \$40,965,436 in March last year. Freight traffic in the Eastern district in March, according to incomplete reports, was about 6.5 per cent under that of the corresponding period last year. Operating revenues of the Eastern carriers totaled \$242,799,409, a decrease of 5.9 per cent. Operating expenses totaled \$190,212,426, a decrease of 5.2 per cent. Class I carriers in the Eastern district during the first three months this year had a net operating income of \$99,363,922, compared with \$98,993,577 during the corresponding period last year.

Class I carriers in the Southern district in March had a net operating income of \$16,075,419, compared with \$14,479,659 in March last year. Freight traffic on the Southern roads in March was about two per cent over that of the same month last year. Gross operating revenues of the Southern carriers in March totaled \$72,438,198, a decrease of 2.2 per cent, while operating expenses totaled \$51,010,258, a decrease of 2 per cent. The net operating income for the Class I roads in the Southern district for the first three months this year was \$41,048,695, compared with \$38,645,162 during the same period last year.

Carriers in the Western district had a net operating income in March of \$20,921,664, compared with \$24,874,952 for the same month last year. Freight traffic in the Western district showed an increase of approximately one-half of one per cent over that of March, 1924. Gross operating revenues of the Western carriers totaled \$171,247,194, a decrease of 3 per cent, while operating expenses totaled \$136,042,802, a decrease of 1.4 per cent. Class I carriers in the Western district during the first three months this year had a net operating income of \$63,469,153, compared with \$65,709,788 during the same period one year ago.

Wage Statistics for February

The number of employees reported by Class I railroads for February, 1925, was 1,725,366, a decrease of 2,967, or 0.2 per cent from the number reported for the previous month, according to the Interstate Commerce Commission's monthly bulletin of wage statistics. The total compensation decreased \$19,488,816 or 8.0 per cent. This large decrease in compensation is due principally to the fact that there were only 23 working days in February, while January had 26. Compared with the returns for the same month last year, the employment shows a decrease of 1.6 per cent and the total compensation a decrease of 3.1 per cent. There was one more working day in February, 1924, than in February, 1925.

The monthly earnings, by groups, were as follows:

Group	Monthly earnings of—			
	Employees reported on daily basis		Employees reported on hourly basis	
	Feb., 1925	Feb., 1924	Feb., 1925	Feb., 1924
Executives, officials and staff assistants..	\$439	\$434		
Professional, clerical, and general.....	182	181	\$119	\$120
Maintenance of way and structures.....	243	240	85	87
Maintenance of equipment and stores....	246	244	115	118
Transportation (other than train, engine, and yard)	97	97	116	118
Transportation (yardmasters, switch tenders, and hostlers).....	257	254	143	141
Transportation (train and engine service) ...	...	...	181	184

The increase or decrease in the number of employees, by groups, February, 1925, compared with previous month, and with February, 1924, was as follows:

Group	February, 1925 compared with	
	Jan. 1925	Feb., 1924
Executives, officials, and staff assistants.....	51	222
Professional, clerical, and general.....	544	(d) 1,566
Maintenance of way and structures.....	437	(d) 5,466
Maintenance of equipment and stores.....	(d) 1,848	(d) 7,643
Transportation (other than train, engine, and yard)	3,023	(d) 1,105
Transportation (yardmasters, switch tenders, and hostlers)	(d) 58	(d) 1,031
Transportation (train and engine service).....	(d) 4,242	(d) 11,334
Net decrease.....	(d) 2,967	(d) 27,923

Traffic News

Stop-overs in the Twin Cities are now granted on one-way tickets to passengers traveling through to western destinations by the Northern Pacific and Great Northern. Heretofore stop-overs were permitted only on round trip tickets. The privilege applies to all tickets from the east routed over these two roads.

The Chicago & Alton placed an additional train in service between Chicago and St. Louis on May 3. The train leaves Chicago at 1 p. m., and arrives in St. Louis at 8:30 p. m. Returning it leaves St. Louis at 3 p. m. and reaches Chicago at 10:30 p. m. It is a duplicate of the Alton Limited in equipment. This train and the Palace Express, which leaves Chicago and St. Louis at 9 p. m., will be operated by way of Jacksonville instead of Springfield. This company now operates seven trains in each direction between Chicago and St. Louis daily.

Suggestions for Rate Investigation

Paul A. Walker, special counsel of the Corporation Commission of Oklahoma, has filed with the Interstate Commerce Commission a statement of suggestions as to the intent of the Hoch-Smith resolution in which he says that Congress has expressed the general public feeling "that something is wrong with the freight rate structure of the country and that the commission should make a complete and thorough study of the rates, but that the resolution contemplated emergency action as to rates on agricultural products. "The intent that something be done soon for the relief of agriculture is so clear from the wording of the resolution and its history," he says, "that there will be disappointment if legislation is not promptly attempted by the commission along that line."

Senator Gooding of Idaho has sent the commission a letter asking it to include the freight rate structure in Idaho in its investigation. He says that the general freight rate structure of the Union Pacific system and other carriers operating in the state is such that it results in charges being assessed for the transportation of freight destined to, originating in, or moving locally in Idaho that are unreasonable and unduly preferential to other localities.

The commission has denied the petition of the interveners in the lake cargo coal rate case, which was argued before the commission last week, representing coal operators in West Virginia, Kentucky, Tennessee and Virginia, for further hearing regarding the present condition of the coal industry in connection with the commission's general rate structure investigation under the Hoch-Smith resolution.

Freight Forwarders Indicted

The Universal Car Loading & Distributing Company, headquarters 40 Rector street, New York city, was indicted by the grand jury in the United States Court in New York on May 4, on charges of fraudulent practices in freight transportation; and also two of its employees. The indictments charged that false bills of lading were made out and used, at the expense of the Lehigh Valley and the Michigan Central. The prosecuting attorney named certain officers of the shipping company whom he did not charge with wrong-doing.

This concern ships out of New York an average of 60 carloads of freight a week, making its profit by consolidating into carload lots 1. c. l. shipments gathered from different shippers who, if shipping individually, would have to pay the l. c. l. rate. The difference between c. l. and 1. c. l. rates is shared with the shipper. Other concerns are engaged in similar enterprises and the business flourishes in New England, Chicago, St. Louis and other places. The government avers, in the present suit, that wrongful classification of goods had in some cases reduced the freight bill, illegally, on a single car by as much as \$110, and that such underbilling practices had been going on for a long time.

THE GREAT NORTHERN is planning the installation of radio receivers on its Oriental Limited. Loud speakers are not to be used, head sets being provided for at each chair in the observation car.

Commission and Court News

Interstate Commerce Commission

Eastern Freight Rate Investigation

This proceeding has been assigned for further hearing June 15 at Washington before Commissioner Eastman. Subsequently there will be a hearing at Chicago, and should there be request therefor from a considerable number of shippers, at Boston.

At Washington evidence will be received from shippers relating to rates in eastern and central territory. The Chicago hearing will be confined to shippers' evidence concerning rates within central territory and between that territory and the other territories.

Personnel of Commissions

Egerton Shore, of Los Angeles, Cal., a member of the Railroad Commission of California since January, 1923, has resigned, effective July 1. His successor has not yet been appointed.

Charles H. Rankin has been appointed railway and hydraulic engineer of the Colorado Public Utilities Commission, with headquarters at Denver, Col., succeeding W. L. Reynolds, deceased.

Court News

Court May Authorize Receiver to Reduce Wages

The Georgia Supreme Court holds that a court appointing a receiver for a railroad could authorize him to reduce the wages of employees, independently of the Transportation Act, if the application of that act would violate the Fifth Amendment, where the railroad was not earning enough revenue to pay operating expenses, including the scale of wages in force when the receiver took charge of its operation, and when the continuance of the payment of such scale of wages would amount to an encroachment upon and final consumption of the property of the railroad company, or where such payment of wages would cause a suspension of its operation.—*Coffee v. Gray* (Ga.) 122 S. E. 687.

United States Supreme Court

Claims for Army Transportation

The St. Louis, Brownsville & Mexico appealed to the Supreme Court of the United States from a judgment of the Court of Claims disallowing three claims for transportation furnished to the War Department. The claims were originally valid. The government's defense was that recovery had been barred by discharge.

The Supreme Court holds that two of the claims were so barred, by §178, Judicial Code, having been included with many others in a petition filed in the Court of Claims by the railway in 1920, in which petition a judgment had been entered for \$22,624 and duly paid.

The remaining claim was never involved in any litigation. The whole claim was for transporting army impedimenta in 1916. The Auditor for the War Department made a deduction in the nature of a counterclaim, from this independent freight bill, because, at the time these impedimenta moved, at least 25 soldiers had moved over the line, entitling the government, under a ruling of the Comptroller of the Treasury in 1918, to the benefit of a provision in a passenger tariff by which, when persons travel in a party, there is allowed for every 25 passenger fares one baggage car free for personal effects. In suits by other companies the Court of Claims held that the Comptroller's ruling was wrong. (See *Missouri Pacific v. United States*, 56 Ct. Cl. 341.) Thereupon this suit was brought to recover the amount wrongly deducted. The lower court held that the railway was barred from

recovery because it had accepted, without protest or appeal, the reduced amount which the Auditor allowed.

The Supreme Court holds that there is no statute or departmental rule making such protest or appeal a condition precedent to the existence of the cause of action or to the railway's resort to the Court of Claims. The court says: "The claim here in question was for an amount fixed by the tariff. A bill for the full sum due was presented to the appropriate officer. The deduction made by the Auditor was without warrant in law. There was no act or omission of the claimant which could conceivably have induced the making of the deduction. Nor did the claimant in any way indicate satisfaction with the reduced amount received by it. The government did not establish the affirmative defense of acquiescence by showing merely acceptance without protest. To hold that such acceptance barred the right to recover the balance wrongly withheld was to give it an effect in judicial proceedings similar to that which it had within the executive department under the Dockery Act. For such a rule there is no support either in the legislation of Congress or in the decisions of this court. The railway was entitled to judgment for the amount wrongly deducted by the Auditor."

The judgment was affirmed as to the first two claims and reversed as to the third.—*St. Louis, Brownsville & Mexico v. United States*. Decided April 27, 1925. Opinion by Mr. Justice Brandeis.

Tax Deductions for Additions to Leased Property

The Central of New Jersey, in 1916, under leases for 999 years and certain pier leases from the city of New York for various terms (with the privilege of renewal, not to exceed 30 years) expended, under the railroad leases, for additions and betterments, and under the pier leases, for the several purposes therein set forth, the aggregate sum of \$1,659,924, of which \$1,525,308 was for the acquisition of the new private rights in the old pier and the construction of the new one.

The company, in making its income tax return for that year, sought to deduct these expenditures from its gross income under sec. 12a of the Revenue Act of 1916, which deduction was refused by the collector. Reversing judgment of the Circuit Court of Appeals, Third Circuit, (289 Fed. 354) which affirmed a judgment for the railroad in an action to recover the increased assessment paid under protest, the Supreme Court of the United States holds that the expenditures were not "expenses paid within the year in the maintenance and operation of its [the railroad's] business and properties"; but were for additions and betterments of a permanent character, such as would, if made by an owner, come within the proviso "that no deduction shall be allowed for any amount paid out for new buildings, permanent improvements or betterments made to increase the value of any property, etc." They were made, the court said, not to keep the properties going, but to create additions to them. They constituted, not upkeep, but investment.

Nor did the expenditures come within the words "rentals or other payments required to be made. * * * The term 'rentals,' the court said, "since there is nothing to indicate the contrary, must be taken in its usual and ordinary sense, that is, as implying a fixed sum to be paid at stated times for the use of property, and in that sense it does not include payments, uncertain both as to amount and time, made for the cost of improvements or even for taxes. * * * Nor do such expenditures come within the phrase 'or other payments,' which was evidently meant to bring in payments *ejusdem generis* with 'rentals,' such as taxes, insurance, interest on mortgages, and the like, constituting liabilities of the lessor on account of the leased premises which the lessee has covenanted to pay.

"In respect of the 999 year leases, the additions and betterments will all be consumed in their use by the lessee within a fraction of the term, and, as to them allowances for annual depreciation will suffice to meet the requirements of the statute. In the case of the pier leases, the improvements may and probably will outlast the term, and, as to them, deductions may more properly take the form of proportionate annual allowances for exhaustion."

The company was allowed \$37,781, the amount of a conceded overpayment, and the district court's judgment was ordered modified in accordance with this opinion.—*Duffy v. Central of New Jersey*. Decided April 13, 1925.

Foreign Railway News

Transportation Museum at Nuremburg

The new Bavarian Transportation Museum at Nuremburg, Germany, was opened with appropriate ceremonies on April 25. Henceforth the museum will be open to the public at a small admission fee. Railway employees, on presentation of their credentials, will be admitted without charge.

Fatal Derailment in Poland

An express passenger train bound from Berlin to East Prussia was derailed on May 1 while passing through the Polish "corridor," resulting in death to 25 persons. East Prussia is entirely separated from the rest of Germany and intercommunication is possible only through Polish territory. A great deal of adverse criticism has resulted in Germany of Poland's alleged undermaintenance of the railway lines over which this communication is maintained and in the instance of the present accident charges of deliberate train wrecking, because of political enmities, it being said that certain representatives of the Soviet government were aboard.

Argentine Railways Prosper

The Argentine railroads have been experiencing a period of prosperity, according to Trade Commissioner Brady at Buenos Aires, and the arrival in Buenos Aires during March of the chairmen of the London boards of the Central Argentine and the Buenos Aires Southern Railways is heralded as an indication of the adoption of big expansion policies by both these systems.

Practically all the foreign-owned lines in Argentina paid dividends of 6 and 7 per cent on their common stock for the financial year 1923-24, and the increased receipts since the beginning of the present year assure satisfactory dividends for 1925. Operating expenses have been greatly reduced since 1921.

Proposed Autonomy for Rumanian State Railways

For several years the desirability of granting "autonomy" to the Rumanian State railways has been discussed, according to Commercial Attaché Van Norman at Bucharest. In western phraseology this would probably be considered as financial independence and would mean that the railways, while continuing under state authority, would have control over their own budgets, could use surplus revenues for betterments and extensions, and perhaps could even have authority to pledge resources for a loan.

An outline of a project recently drawn up by the director general of the railways, which will probably be voted on by Parliament during the present session, indicates that the contemplated autonomy is nothing more than a new project for the reorganization of the railroads. Under this plan the railroads would continue under the control of the Minister of Communications, functioning in peace times in accordance with civil laws and regulations, and during war passing under military control. In view of their service to the state the lines would continue free of taxation.

There are to be two organs of control, to be known as the Council of Administration and the Direction General. The council will be composed of nine members, eight to be named by the Minister of Communications and the ninth by the Minister of War. Of the eight, three are to be engineers, one a financial expert, one an authority on legal matters, one a business man and one an agricultural authority. These members will be elected for four years, with the right of re-election.

It is proposed that the council concern itself chiefly with the fixing of rates, since it is expected that under the new system the lines will be self-supporting. Nothing less than full rates are to be charged, free passes being abolished. Under the new arrangement the budget of the state railways would no longer appear on the national budget, except when there is an actual net income, in which case it would be turned in to the national treasury. Before such net income could be realized, however, 45 per cent of the gross income would have to be used for upkeep and betterments, an undetermined percentage for the construction of new lines, and 10 per cent for bonus for the personnel.

Equipment and Supplies

Locomotives

THE MISSOURI-ILLINOIS is inquiring for 2 Consolidation type locomotives.

THE DAVISON CHEMICAL COMPANY is inquiring for one six-wheel switching locomotive.

THE IMPERIAL JAPANESE GOVERNMENT RAILWAYS have ordered through Mitsui & Co., New York, 6 three-cylinder Pacific type locomotives from the American Locomotive Company.

THE HAVANA CENTRAL has ordered six Mountain type locomotives from the Baldwin Locomotive Works, for use on the United Railways of Havana. Inquiry for this equipment was reported in the *Railway Age* of April 11.

MICHIGAN CENTRAL.—The New York Central has advertised that it will receive bids to noon on June 1 for "electric locomotives required by the Michigan Central." The number on which bids are asked is not given in the advertisement. The locomotives are understood to be for use in the Detroit Tunnel.

Freight Cars

THE CHICAGO & ALTON will rebuild 400 box cars in its own shops.

THE MOBILE & OHIO is inquiring for six underframes for caboose cars.

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for 25 caboose cars.

THE ILLINOIS TRACTION COMPANY is inquiring for from 50 to 100 composite hopper cars.

THE BLACK SERVANT COAL COMPANY has ordered from the American Car & Foundry Company 12 side dump cars of 7 cu. yd. capacity.

THE MICHIGAN CENTRAL has placed an order with the Illinois Car & Manufacturing Company for the conversion of 300 box cars into flat cars.

THE SOROCABANA RAILWAY OF BRAZIL is inquiring through New York City export houses for 350 gondola cars of 30 tons' capacity.

THE CHICAGO, MILWAUKEE & ST. PAUL is inquiring for a total of 6,500 new cars. In addition to its inquiry for 5,500 cars, reported in the *Railway Age* of April 18, it is now asking for 500 mill type gondola cars and 500 flat cars. Mention was made in the *Railway Age* of April 25 that the company was about to inquire for gondola and flat cars.

Passenger Cars

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for steel underframes for 20 baggage cars.

THE RAILWAYS OF THE PROVINCE OF BUENOS AIRES are inquiring through the car builders for 4 passenger cars.

THE LEHIGH VALLEY has ordered from the J. G. Brill Company one combination passenger and baggage gasoline rail motor car.

THE NEW YORK CENTRAL has ordered 10 combination baggage and mail cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of April 11. Eight of these cars are for service on the New York Central and two on the Michigan Central.

THE HAVANA CENTRAL has ordered from the International Motor Company six gasoline rail motor cars, each car to seat 35 passengers and to have a baggage compartment. These cars are for service on the United Railways of Havana. Inquiry for this equipment was reported in the *Railway Age* of March 14.

Iron and Steel

THE CHESAPEAKE & OHIO is inquiring for 1,300 tons of tie plates.

THE MAINE CENTRAL is inquiring for 300 tons of steel for bridges.

THE NEW YORK CENTRAL is inquiring for 200 tons of steel for bridges.

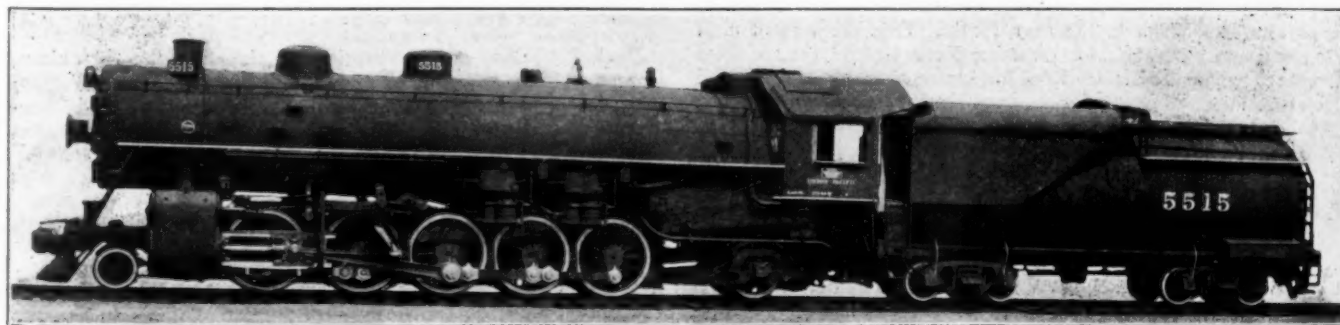
THE FLORIDA EAST COAST is inquiring for about 150 tons of steel for bridges.

THE LEHIGH & HUDSON RIVER has ordered from the Bethlehem Steel Corporation 175 tons of steel for bridges.

FREIGHT CAR REPAIR SITUATION

1924	Number freight cars on line	Cars awaiting repairs			Per cent of cars awaiting repairs	Month	Cars repaired		
		Heavy	Light	Total			Heavy	Light	Total
January 1.....	2,279,363	118,653	39,522	158,175	6.9	December	87,758	2,073,280	2,161,038
April 1.....	2,274,750	125,932	46,815	172,747	7.6	March	77,365	2,213,158	2,290,523
July 1.....	2,279,826	144,912	49,957	194,869	8.5	June	70,480	1,888,822	1,959,379
October 1.....	2,304,020	157,455	48,589	206,044	8.9	September	74,295	1,372,277	1,446,572
January 1, 1925.....	2,293,487	143,962	47,017	190,979	8.3	December	66,615	1,288,635	1,355,250
February 1.....	2,305,520	139,056	47,483	186,539	8.1	January, 1925.....	69,084	1,358,308	1,427,392
March 1.....	2,313,092	141,192	43,855	185,047	8.0	February	66,283	1,313,088	1,379,371
April 1.....	2,315,732	143,329	43,088	186,417	8.1	March	71,072	1,348,078	1,419,150

Data from Car Service Division Reports.



2-10-2 Type Locomotive Built for the Union Pacific System by the Baldwin Locomotive Works

THE MISSOURI PACIFIC has ordered 366 tons of structural steel for repairs to a bridge, at Little Rock, Ark., from Stupp Brothers.

THE AMERICAN LOCOMOTIVE COMPANY has ordered from the Lackawanna Bridge Company, 500 tons of structural steel, for use at Dunkirk, N. Y.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 800 tons of bridge steel from the American Bridge Company. This company has also received bids for 700 tons of steel for a bascule bridge.

Machinery and Tools

THE NEW YORK CENTRAL has placed an order for a 6-ft. radial drill.

THE MOBILE & OHIO has placed an order for a 100-ton bushing press.

THE CHICAGO, ROCK ISLAND & PACIFIC has placed orders for a 12-ft. plate bending roll and a 48-in. by 14 ft. planer.

THE ATLANTIC COAST LINE has placed an order for a six-spindle arch bar drill. This company is inquiring for one 160-ton wrecking crane.

THE ILLINOIS CENTRAL is inquiring for one 20-in. stroke heavy duty metal spotting machine, one grinder, one 6-in. hack saw, three 2-in. double head bolt cutters, one polishing machine for polishing boiler flues, and one 14-in. by 2-in. wheel grinding machine.

THE FLORIDA EAST COAST has placed orders for tools as follows: A 79-in. driving wheel lathe; 5-ton and 10-ton roundhouse electric cranes; 44-in. Niles boring and turning mill; 27-in. by 14-ft. LeBlonde engine lathe, and 32-in. Aurora drill press from the Niles-Bement-Pond Company; Morris 16-in. by 8-ft. engine lathe from the Morris Machine Tool Company; 100-ton forcing and bending press from the Watson-Stillman Company; Landis double-head threading machine from the Landis Machine Tool Company; Ferguson flue welding furnace from the Ferguson Furnace Company and Ryerson flue cleaning machine and Ryerson tube cutting machine from Joseph T. Ryerson & Son, Inc.

Signaling

THE GULF, MOBILE & NORTHERN has ordered from the General Railway Signal Company a cabin interlocking plant, 3 working levers, to be installed at Chickasaw Spur, Ala.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered from the Union Switch & Signal Company for installation at Ridge Farm, Ill., at the crossing of the C. C. C. & St. L., a mechanical interlocking; 34 working levers.

THE WESTERN OF ALABAMA has purchased from the Union Switch & Signal Company, 44 Style "S" one-arm semaphores, with the necessary relays and other apparatus for the installation of block signaling on its line between Opelika and Milstead, Ala., 39 miles.

Miscellaneous

THE NEW YORK CENTRAL has received bids for tie plates for the requirements of the New York Central Lines, and contracts are expected to be let in the near future. Bids are wanted until 12 o'clock noon, May 15, for the New York Central requirements of contact rail and of splice bars for same; bids are wanted until 12 o'clock noon, May 20, for its requirements of frogs, switches, track bonds, wire fences, etc.

THE LOCOMOTIVE REPAIR SHOPS of the Pennsylvania at Sunbury, Pa., were closed on April 30. The lack of facilities for repairing large locomotives has necessitated the assignment of this work to other shops. Of the 200 men who are thus thrown out of work, many have already been given positions at other places. G. A. Schneider, master mechanic, retains his headquarters at Sunbury. Mr. Schneider is also master mechanic of the Schuylkill division. The first shop at Sunbury was built in 1865, and employed about 50 men.

Supply Trade News

H. W. Redman has been appointed manager of the Chicago office of the Koppel Industrial Car & Equipment Company.

The B. W. Parsons Company, St. Paul, Minn., has removed its offices from 1306 Merchants Bank building to 1010 Builders Exchange building, St. Paul.

The H. C. McNair Company, St. Paul, Minn., has been appointed district representative for the Elwell-Parker Electric Company, Cleveland, Ohio.

The Oliver Electric & Manufacturing Company, St. Louis, Mo., has removed its Chicago office from the McCormick building to the Straus building, 310 South Michigan boulevard.

Don C. Wilson has been recently appointed general sales manager of the Edison Storage Battery Company, with headquarters at Orange, N. J. Mr. Wilson was educated in the public schools of Broken Bow, Neb., and the Nebraska State University, completing his course in electrical engineering in 1907, after which he engaged in electrical work with the Stone & Webster Construction Company at Seattle; the United States Navy Yard, Bremerton; the Pacific Gas & Electric Company, Los Angeles; the Independent Telephone Company, Omaha; the Union Pacific Railroad, Omaha; the Central of Georgia at Savannah and the Delco Light Company of Chattanooga. In 1920 he became assistant sales manager for the Edison Storage Battery Company in charge of the railway department, which position he held at the time of his recent appointment.



D. C. Wilson

The Orton & Steinbrenner Company, Chicago, has appointed the Lincoln Products Corporation its representative at 320 Market street, Newark, N. J., and at 30 Church street, New York.

E. H. Batchelder, Jr., Chicago, has been appointed western railroad sales representative of the B. F. Nelson Manufacturing Company, Minneapolis, Minn., to handle the sale of this company's products in the West.

At a meeting of the board of directors of the Locomotive Firebox Company, Chicago, on May 1, Walter S. Carr, secretary and treasurer, was elected president to succeed John W. Nicholson, founder and president, deceased. Charles Gilbert Hawley was elected secretary.

Earl E. Miller, representative of the Sullivan Machinery Company, has been promoted to manager of the El Paso, Tex., branch office to succeed R. S. Weiner, who has been transferred to Chicago. The office of this company at Dallas, Tex., has been removed from the Western Indemnity building to the Santa Fe building, rooms 522 and 523.

The Hulson Grate Company, Keokuk, Iowa, has purchased the Pechstein Iron Works, Keokuk, which consists of a foundry, machine shop, boiler shop and pattern shop. It is planned to discontinue the boiler shop and machine shop and devote the entire plant to the designing, pattern making and casting of Hulson grates. The Hulson Grate Company has taken possession of this plant and will move its present plant to

this location, Ninth and Johnson streets, in about two or three weeks, at which time its offices will have been remodeled.

The Industrial Works, Bay City, Mich., has opened a district office at 425 Whitney Central building, New Orleans, La., in charge of **John A. Abele**, district sales manager, and another at 843-A Hurt building, Atlanta, Ga., in charge of **John J. Murphy**, district sales manager. **Douglas J. Calder**, **Conway J. Neacy** and **Monroe J. Frankel** have been appointed district sales engineers, with headquarters at Chicago. **Chester F. Delbridge** has been appointed district sales engineer, with headquarters in the Railway Exchange building, St. Louis, Mo.

Sir Thomas Octavius Callender, managing director of **Callender's Cable & Construction Company, Ltd.**, London, England, the largest manufacturers in the world of paper insulated cables, and a director in several other corporations and prominent in the development of the electrical industry in Great Britain, will soon visit the United States. Sir Thomas entered his father's business in 1873 in connection with the paving of streets with asphalt. Experiments carried out by himself and his brothers led to the discovery of the insulating product known as vulcanized bitumen. In 1882 a company was formed to manufacture insulated wires and cables by this process and and upon the development of this business and the expansion of the electrical industry the company was reorganized in 1898 to its present name. Manufacturing arrangements are being completed in the United States for the **Okonite-Callender Cable Company, Inc.**, a subsidiary of the Okonite Company, New York, to supply the electrical industry with impregnated paper cables made under the Callender patents. A new plant at Paterson, N. J., equipped with specially designed Callender machinery embodying the latest practices of this country and Europe, will be ready for operation about July 1. A completely equipped electrical research laboratory will be maintained which will work in conjunction with the Callender research laboratory.



Sir Thomas Callender

W. F. Barrett received the honorary degree of doctor of science from the University of Pittsburgh recently, in recognition of his achievements in the production and commercialization of industrial gases. Mr. Barrett is vice-president and a director of the Linde Air Products Company, president of the Dominion Oxygen Company, Ltd., vice-president and a director of the Prest-O-Lite Company, Inc., and a director of the National Carbon Company, Inc., all companies affiliated together in the Union Carbide & Carbon Corporation. He is also vice-president of both the Union Carbide & Carbon Research Laboratories, and the Carbide & Carbon Chemicals Corporation.

The **Blair Tool & Machine Corporation**, New York, organized in 1895, was recently reorganized on account of the death of Mr. Potter, the former owner, and is now operating under the following management: **Robert A. Bachman**, general manager, for 18 years vice-president and general manager of the Thomas A. Edison Company's Laboratories, Edison Storage Battery Company and Edison Chemical Works of West Orange and Silver Lake, N. J.; **James E. Engle**, chief engineer in charge of production, for 18 years in charge of production and jobbing department of Garvin Machine Company and **William J. Grauer**, general shop superintendent, for 16 years in charge of various departments of R. Hoe & Company.

Joseph J. McGarrigle has been appointed eastern manager of the **Clark Car Company**, succeeding **B. K. Mould**, resigned.

His headquarters are at 52 Vanderbilt avenue, New York City. Mr. McGarrigle graduated in civil and structural engineering from the Pennsylvania State College in the class of 1914. He served in the engineering department of the American Bridge Company until 1916, and then entered the engineering department of the Department of City Transit, Philadelphia, Pa. Mr. McGarrigle served as first lieutenant in the United States Army from July, 1917, until he went to the Midvale Steel & Ordinance Company, car department, general sales, Philadelphia, Pa., in 1919, and when it was merged with the Bethlehem Steel Company, he remained in the same department until the time of his joining the Clark Car Company on November 1, 1924.

Robert J. McKay, vice-president of the Pickett Coal & Coke Company, Chicago, has been appointed vice-president of **A. O. Norton, Inc.**, Boston, Mass., with headquarters in Chicago. **E. W. Hanegan**, of the car department of the Chicago Great Western, Oelwein, Iowa, has resigned to become special representative of A. O. Norton, Inc., with headquarters in Chicago. **O. L. Wright**, representative of Philip S. Justice & Co., also has been appointed representative of A. O. Norton, Inc., with headquarters at 421 Chestnut street, Philadelphia, Pa. **Lorenzo Norvell**, railroad representative of Fairbanks, Morse & Co., has resigned to become representative of A. O. Norton, Inc., with headquarters in the newly opened office in the Century building, St. Louis, Mo. **J. W. Cain**, manager of purchases of the American Short Line Railroad Association, Chicago, has been appointed representative of A. O. Norton, Inc., in the newly opened office in the Second National Bank building, Houston, Texas.

THE MISSOURI-KANSAS-TEXAS, reported in the *Railway Age* of March 21 as inquiring for 500 refrigerator cars and 1,000 box cars and in the *Railway Age* of April 18 for 300 hopper cars, has postponed ordering this equipment indefinitely.



An Austrian Switchman

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company has purchased land adjoining its present property at Los Angeles, Cal., to be used in the development of a new freight terminal, but no immediate construction is planned.

ATCHISON, TOPEKA & SANTA FE.—This company is calling for bids for the construction of a 12-stall reinforced concrete engine-house, foreman's office and lavatory building at Hutchinson, Kan. A contract has been awarded to Roberts & Schaefer Company, Chicago, for the construction of a 300-ton reinforced concrete coaling station at Hutchinson.

BOSTON & ALBANY.—Contracts for the new union station at Springfield, Mass., have been awarded as follows:

Contract for plumbing and drainage to the W. G. Cornell Company, Boston.

Contract for electrical work to Interstate Electric Construction Corp., Springfield.

General contract for construction of new station to J. Henry Miller, Inc., Baltimore, Md.

Contract for heating and ventilating work to Hampen Plumbing & Heating Co., Springfield.

CANADIAN NATIONAL.—Two branch line bills which were passed by the House last session but rejected by the Senate were reintroduced in the House of Commons at Ottawa last week by George P. Graham, Minister of Railways and Canals. One is for the Turtleford branch in Saskatchewan with mileage of 67 and an estimated total cost of \$1,871,000, and the other is for the Sunnybrae line in Nova Scotia with mileage of 67 and an estimated cost of \$3,500,000.

CHESAPEAKE & OHIO.—A contract has been awarded to Haley, Chisholm & Morris, Charlottesville, Va., for the construction of the engine terminal at Russell, Ky., reported in the *Railway Age* of March 28.

CHICAGO, BURLINGTON & QUINCY.—A contract has been awarded to the Burrell Engineering & Construction Company, Chicago, for the construction of a grain elevator at St. Joseph, Mo., to cost approximately \$200,000.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded to the Flick Construction Company, Chicago, for the grading in connection with the construction of second track from Latimer, Kan., to Dwight, 19 miles, authorization of which was reported in the *Railway Age* of February 28.

FLORIDA EAST COAST.—The Interstate Commerce Commission has authorized the construction of a cut-off which this company proposes to build from St. Augustine, Fla., to Bunnell (29 miles) which will reduce the company's main line mileage for through traffic by 19.4 miles. The cost of the work is estimated at \$2,760,000.

LOS ANGELES & SALT LAKE.—A joint petition with the county and city of Los Angeles, Cal., and the city of Long Beach, has been filed with the Railroad Commission of California asking for authority to construct a viaduct over Dominguez Creek on the Anaheim Road in the Los Angeles harbor district. The cost of the viaduct which would be divided among the parties interested, is estimated at approximately \$535,000.

MAINE CENTRAL.—A contract has been awarded to the Purinton Construction Company, Waterville, Me., for the reconstruction of the railroad's car shops at that point, reported in the *Railway Age* of May 2. The work will cost approximately \$32,000.

MISSOURI PACIFIC.—This company has awarded a contract to Winston Brothers, Minneapolis, Minn., for the construction of 30 miles of second track between St. Louis, Mo., and Jefferson City, at an estimated cost of \$2,000,000. This project is part of the general plan to double track the entire line between St. Louis and Kansas City, which is to be completed within the next five years at a cost of \$15,000,000.

NEW YORK CENTRAL.—A contract for repairs to the abutments of a bridge at South Clyde, N. Y., to cost approximately \$40,700, has been awarded to Wm. M. Ballard, Inc., Syracuse, N. Y.

NEW YORK, CHICAGO & ST. LOUIS.—This company has been considering the construction of shops and terminal facilities at Ft. Wayne, Ind., to cost approximately \$2,500,000, but has now deferred the project indefinitely.

NORFOLK & WESTERN.—Bids are being received for the construction of a house over an open pier at Lambert's Point, Va.

NORTHERN PACIFIC.—Bids will be closed on May 15 for the construction of a commissary building and coach yard facilities at St. Paul, Minn.

OREGON TRUNK.—This company has applied to the Interstate Commerce Commission for authority to construct a 150-mile extension from Bend, Oregon, to Klamath Falls, at an estimated cost of \$6,500,000.

PENNSYLVANIA.—A contract has been given to the Belmont Iron Works, Philadelphia, for the erection of signal bridges at various points on this company's lines to cost a total of \$25,000.

PENNSYLVANIA.—A contract has been awarded to the James McGraw Company, Philadelphia, for the completion of the railroad's engine house facilities at Stony Creek, Thurlow, Pa., at an estimated cost of \$100,000.

QUEBEC GREAT NORTHERN.—This company has been chartered to build a line from Quebec City to Hamilton Inlet, via Chicoutimi, and a branch line to James bay or Hudson's bay and to the St. Lawrence river. It is capitalized at \$2,000,000.

READING.—A contract has been awarded to the Belmont Iron Works, Philadelphia, Pa., covering structural metal work required for the superstructure of a coal trestle to be erected at the head of the railroad's Mahanoy plane.

READING.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for a 1,000-ton coaling station and sanding facilities, to be erected in its North Sixth street engine yard at Reading, Pa.

READING.—The Curtis-Grindrod Company, Philadelphia, has a contract for the erection of a coaling station at Reading, Pa., to cost approximately \$65,000. The company has sent out plans for contractors' estimates on a freight station at Lebanon, Pa., and a machine shop at Reading, Pa.

ST. LOUIS-SOUTHWESTERN.—Plans are reported to have been prepared for the construction of a machine shop addition to the roundhouse at Shreveport, La.

SINGER MANUFACTURING COMPANY.—This company, located at Ottawa, Ont., will shortly ask for bids for the construction of a 32-mile, standard gage line in the Province of Quebec.

SOUTHERN PACIFIC.—This company has applied to the Interstate Commerce Commission for authority to construct an 8-mile extension of its Lodi branch from Valley Spring, Calif.

WEST VIRGINIA MIDLAND.—The Interstate Commerce Commission has authorized this company to acquire an existing line of railroad from Holly Junction, W. Va., to Webster Springs (30 miles) and to build an extension from the latter point to Bergoo, a distance of 11.7 miles. The line is narrow gage and 35-lb. relay rails will be used in constructing the extension, which is estimated to cost \$129,525.

THE EXECUTIVE COMMITTEE of the American Society for Testing Materials will recommend to the society at the annual meeting in Atlantic City, N. J., in June, the establishment of a medal and an annual lecture as a means of stimulating research in materials and of keeping before the members the important function of the society in promoting knowledge of engineering materials. The executive committee has felt that its establishment affords the opportunity of commemorating for all time the names of the first president and the first secretary of the society and it will therefore recommend that the medal be known as the Charles B. Dudley medal and the lecture be known as the Edgar Marburg lecture.

Railway Financial News

ANN ARBOR.—Authorized to Issue Note.—The Interstate Commerce Commission has granted authority for the issue of \$1,000,000 5-year 6 per cent notes to be sold at not less than 95 per cent of par and for the pledge of \$2,000,000 improvement and extension mortgage bonds as collateral security for said notes.

New Director.—Edward L. Love has been elected a director.

ATCHISON, TOPEKA & SANTA FE.—Bonds of Subsidiary Companies.—The Interstate Commerce Commission has granted authority to the following additional subsidiary companies to issue first mortgage 6 per cent bonds in the amounts named to be delivered to the parent company in payment for advances for capital purposes: Jasper & Eastern, \$1,425,000; Osage County & Santa Fe, \$1,200,000; Cane Belt, \$1,000,000, and to the Gulf Beaumont & Great Northern to issue for similar purposes a general mortgage 6 per cent bond of \$400,000.

BONDS OF SUBSIDIARY COMPANIES.—Similar authority has also been given for the issuance of first mortgage bonds by the Oil Fields & Santa Fe, \$830,000; Barton County & Santa Fe, \$800,000.

BOSTON & MAINE.—Abandonment.—This company's applications to the Interstate Commerce Commission for authority to abandon four branch lines in Massachusetts have been set for hearing on May 18 at Boston before the I. C. C., and the Department of Public Utilities of Massachusetts, and applications to abandon four branch lines in New Hampshire have been set for hearing on May 21 at Concord, N. H., before the I. C. C., and the Public Service Commission of New Hampshire.

CHESAPEAKE & OHIO.—1924 Earnings.—Annual report for 1924 shows net earnings after charges of \$12,101,071, equivalent after payment of dividends on the 6½ per cent cumulative preferred stock to \$16.77 per share on the common stock. Net earnings in 1923 were \$8,979,431, equivalent after preferred dividends to \$12.47 a share on the common stock. Selected items from the income statement follow:

CHESAPEAKE & OHIO			
	1924	1923	Increase or decrease
Total railway operating revenues.....	\$108,033,448	\$101,975,798	\$6,057,651
Maintenance of way.....	\$15,551,838	\$12,847,570	\$2,704,268
Maintenance of equipment.....	30,116,566	28,693,866	1,422,700
Transportation	33,127,514	33,725,951	—598,437
Total operating expenses.....	\$82,781,703	\$78,889,776	\$3,891,926
Operating ratio	76.6	77.4	—0.8
Net revenue from operations.....	\$25,251,746	\$23,086,021	\$2,165,724
Railway tax accruals.....	4,628,463	4,687,394	—58,931
Railway operating income.....	\$20,463,076	\$18,369,351	\$2,093,725
Equipment rents, net.....	\$2,748,747	\$2,155,899	\$592,848
Joint facility rents, net.....	1,318,903	1,389,894	70,992
Net railway operating income.....	\$21,892,920	\$19,135,356	\$2,757,565
Gross income	\$23,779,001	\$21,351,404	\$2,427,597
Interest on debt.....	\$11,263,067	\$11,991,208	—\$728,141
Total deductions from gross income	\$11,677,930	\$12,371,973	—\$694,043
Net income	\$12,101,071	\$8,979,431	\$3,121,640

CENTRAL OF NEW JERSEY.—Equipment Notes.—The Interstate Commerce Commission has granted authority for the issuance of \$1,500,000 4½ per cent equipment bonds, series L, to be sold at not less than 98 per cent of par and accrued interest, making an annual cost to the carrier of approximately 4.93 per cent. The bonds are to be dated April 15 and mature in annual instalments to 1935. The equipment consists of 25 air-dump cars, 30 passenger train cars and 20 freight locomotives, having a total approximate cost of \$1,883,816.

CHICAGO & NORTH WESTERN.—1924 Earnings.—Annual report shows net income after charges of \$7,671,324 equivalent after allowance for 7 per cent preferred dividends to 4.07 per share on the \$147,499,641 common stock outstanding. Net after charges in

1923 was \$8,737,468. Selected items from the income statement follow:

CHICAGO & NORTH WESTERN			
	1924	1923	Increase or decrease
Average mileage operated.....	8,462.83	8,462.53	.....
Railway operating revenues.....	\$149,454,584	\$160,425,965	—\$10,971,381
Maintenance of way.....	\$22,559,653	\$23,368,264	—\$809,211
Maintenance of equipment.....	30,581,466	35,920,062	—5,338,596
Transportation	60,501,486	66,508,611	—6,007,125
Total operating expenses.....	\$120,536,645	\$132,507,531	—\$11,970,886
Net revenue from operations.....	\$28,917,939	\$27,918,434	\$999,505
Railway tax accruals.....	\$9,348,842	\$9,277,409	\$71,433
Railway operating income.....	\$19,505,576	\$18,576,892	\$928,684
Equipment and joint facility rents, net dr.....	\$2,721,525	\$2,733,517	—\$11,992
Net railway operating income.....	\$16,784,051	\$15,843,375	\$940,676
Non-operating income	3,437,327	4,536,206	—\$1,098,879
Gross income	\$20,221,378	\$20,379,581	—\$158,203
Interest on funded debt.....	\$12,333,591	\$11,440,569	\$893,022
Total deductions from gross income	\$12,550,054	\$11,642,113	\$907,941
Net income	\$7,671,324	\$8,737,468	—\$1,066,144
Disposition of net income—			
Divs. on pfd. 7 per cent.....	\$1,567,650	\$1,567,650	.....
Divs. on com. 4 per cent.....	5,806,100	5,806,100	.....
Surplus for year carried to profit and loss	\$297,574	\$1,363,718	.....

CHICAGO, BURLINGTON & QUINCY.—1924 Earnings.—Annual report for 1924 shows net earnings after charges of \$21,899,829 equivalent to \$12.81 a share on \$170,839,100 outstanding capital stock. Net earnings in 1923 were \$19,290,529 equivalent to \$11.22 per share. Selected items from the income statement follow:

CHICAGO, BURLINGTON & QUINCY			
	1924	1923	
Average mileage operated.....	9,407	9,401	
Railway Operating Revenues.....	\$162,674,878	\$171,270,661	
Maintenance of way	\$19,413,917	\$21,984,557	
Maintenance of equipment.....	34,786,170	40,654,336	
Transportation	57,810,258	63,395,808	
Total Operating Expenses.....	\$119,958,734	\$134,290,379	
Operating ratio	73.74	78.41	
Net Revenue from Operations.....	\$42,716,144	\$36,980,282	
Railway tax accruals.....	10,642,576	9,268,055	
Railway operating income.....	\$31,998,094	\$27,654,771	
Equipment rents, net dr.....	\$1,981,345	\$1,173,124	
Joint facility rents, net dr.....	1,274,637	1,116,080	
Net Railway Operating Income.....	\$28,742,112	\$25,365,567	
Non-operating income.....	\$3,286,469	\$3,670,841	
Gross Income	\$35,284,563	\$31,325,612	
Rent for leased roads.....	\$135,885	\$114,126	
Interest on funded debt.....	8,641,439	8,256,488	
Total Deductions from Gross Income.....	\$13,384,734	\$12,035,083	
Net Income	\$21,899,829	\$19,290,529	
Disposition of net income—			
Sinking funds	\$293,930	\$289,410	
Dividends	17,083,765	17,083,735	
Surplus for year carried to profit and loss.....	\$4,522,133	\$1,917,385	

CHICAGO, ROCK ISLAND & PACIFIC.—Asks Authority to Acquire Cotton Belt Stock.—This company has applied to the Interstate Commerce Commission for authority to acquire control of the St. Louis Southwestern by purchase of its capital stock, stating that it now exercises such control as is incident to the ownership of \$13,348,000 of preferred stock and \$1,578,800 of common stock out of a total outstanding of \$19,983,650 of preferred stock and \$16,356,100 of common stock.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—1924 Earnings.—Annual report for 1924 shows net earnings after charges of \$1,036,908 as compared with \$624,173 in 1923. Dividends of 5 per cent were paid on the preferred stock, leaving a balance after dividends in 1924 of \$473,943. In 1923, the company paid 7 per cent dividends on its preferred and 2½ per cent on its common stock and had a deficit after dividends of \$627,896. Selected items from the income statement follow:

(Continued on page 1187)

Annual Report

Forty-first Annual Report of the Southern Pacific Company and Proprietary Companies, Year Ended December 31, 1924

SOUTHERN PACIFIC COMPANY

REPORT OF THE BOARD OF DIRECTORS

NEW YORK, N. Y., April 30, 1925.

TO THE STOCKHOLDERS OF THE SOUTHERN PACIFIC COMPANY:
Your Board of Directors submits this report of the operations and affairs of the Southern Pacific Company and of its Proprietary Companies for the fiscal year ended December 31, 1924.

Transportation Operations

The following table shows the Net Railway Operating Income of the Southern Pacific Transportation System for the year 1924 compared with that for the year 1923:

	Year Ended December 31, 1924	+ Increase — Decrease	Per Cent
1. Average miles of road operated	11,476.41	+	54.29
2. Freight	\$193,692,957.66	—	\$7,522,885.33 3.74
3. Passenger	56,566,134.41	—	5,971,827.55 9.55
4. Mail and express	11,649,054.20	—	48,908.30 .42
5. All other transportation	7,430,606.91	+	612,188.80 8.98
6. Incidental	6,459,204.58	—	495,539.69 7.13
7. Joint facility—Credit	181,099.06	+	5,317.14 3.02
8. Joint facility—Debit	74,946.04	—	15,904.69 26.94
9. Total railway operating revenues	\$275,904,110.78	—	\$13,437,559.62 4.64
Railway Operating Expenses			
10. Maintenance of way and structures	\$39,367,717.42	—	\$2,253,991.71 5.42
11. Maintenance of equipment	47,213,237.71	—	3,659,391.17 7.19
12. Total maintenance	\$86,580,955.13	—	\$5,913,382.88 6.39
13. Traffic	5,239,730.72	+	161,621.57 3.18
14. Transportation	99,119,567.71	—	50,112.63 .05
15. Miscellaneous operations	4,105,406.25	—	261,380.56 5.99
16. General	9,399,613.62	+	719,744.85 8.29
17. Transportation for investment—Credit	1,393,944.79	—	\$5,727,726.41 2.74
18. Total railway operating expenses	\$203,051,328.64	—	\$5,727,726.41 2.74
19. Net revenue from railway operation	\$72,852,782.14	—	\$7,709,833.21 9.57
20. Railway tax accruals	\$19,867,104.43	—	\$642,840.67 3.13
21. Uncollectible railway revenues	144,538.87	+	55,945.95 63.15
22. Railway operating income	\$52,841,138.84	—	\$7,122,938.49 11.87
23. Equipment rents—Net	4,802,215.18	—	763,168.84 13.71
24. Joint facility rents—Net	†62,492.06	+	131,676.04 67.82
25. Net railway operating income	\$48,101,415.72	—	\$6,491,445.69 11.89

*For the purpose of comparison, the 1923 figures were restated to include the operations of the El Paso & Southwestern System companies for the month of November and December, 1923. However, in the Combined Income Account of this report the 1923 figures used for comparison correspond to those reported in the 1923 annual report. †Credit.

Transportation Operations

Transportation operations for the last four years compare as follows:

	1924	1923	1922	1921
Operating revenues	\$275,904,111	\$287,204,635	\$262,519,169	\$269,494,365
Relative to 1921 (100)	102	107	97	100
Operating expenses	203,051,329	207,166,588	193,664,456	212,572,262
Relative to 1921 (100)	96	97	91	100
Operating ratio, per cent	73.59	72.13	73.77	78.88
Net revenue from railway operations	72,852,782	80,038,047	68,854,713	56,922,103
Relative to 1921 (100)	128	141	121	100
Railway tax accruals	19,867,104	20,365,328	18,859,356	15,539,469
Relative to 1921 (100)	128	131	121	100
Net railway operating income	48,101,416	54,228,023	46,222,846	35,946,791
Relative to 1921 (100)	134	151	129	100
Traffic units (ton miles plus 3 times passenger miles) thousands	20,400,622	21,044,120	18,012,411	17,451,417
Relative to 1921 (100)	117	121	103	100

There was little change in general conditions in 1924 from those of 1923, indicating that railway operations are becoming more stabilized following the abnormal conditions after the end of

Federal Control in 1920. As has been stated in reports for previous years, the Transportation Act of 1920 provides that rates shall be so adjusted that carriers as a whole or in groups designated by the Interstate Commerce Commission shall earn an aggregate net railway operating income equivalent to a fair return upon the aggregate value of the railway property held for and used in the service of transportation; and that the Interstate Commerce Commission, pursuant to authority delegated to it by said Act, has fixed upon 5¾ per cent as such fair return. Notwithstanding the heavy volume of traffic handled by your lines and the marked gain in operating efficiency, as indicated by the above tabulation, the relationship between rates and the prices of labor and material have not yet permitted your lines to earn the fair rate of return prescribed by the Commission.

The rate of return upon the book value of road and equipment of your lines has been as follows:

Year	1921	1922	1923	1924
	3.36%	4.29%	4.81%	3.99%

Average for the four years..... 4.11%

The decrease in net railway operating income of \$6,491,445.69, or 11.89 per cent., shown in table of "Transportation Operations," may be accounted for as follows:

Increase in average wage rates	\$1,967,000
Increase in prices of fuel	2,769,000
Increases in prices of other materials	240,000

Total increase in prices of labor and material	\$4,976,000
Increase in charges for depreciation and retirement of equipment	1,671,000

Total \$6,647,000

Except for the above, net railway operating income would have shown an increase over previous year despite a decrease of \$13,437,559.62, or 4.64 per cent., in railway operating revenues, the effect of which was overcome by a reduction in expenses for maintenance, by greater efficiency in the use of fuel, and by better freight train loading. The revenue tons carried one mile by the principal railroads of the country decreased nearly 6 per cent. below the unprecedented volume handled during the previous year. Notwithstanding an increase of 20 per cent. in 1923 over 1922 in revenue tons carried one mile by your lines, the year 1924 shows an increase over 1923 of more than 1 per cent., a shrinkage on the lines west of Ogden and El Paso having been more than offset by an increase on the lines east of El Paso, but a smaller ratio of the tonnage consisted of high class commodities and the freight revenue of the system was nearly 4 per cent. less than during the preceding year. The revival of trade that appeared at the beginning of the year came to an end in March and was not resumed until after the election in November. In the Pacific States the decline was aggravated by an early frost, an unusual deficiency of rainfall and an outbreak of hoof and mouth disease which materially reduced shipments of farm and animal products, resulting in a shrinkage of manufactured products purchased by the farmers, orchardists, and the public generally. Permits granted for building in Los Angeles and vicinity aggregated \$50,000,000 less than during the preceding year, which resulted in a substantial decline in the movement of lumber and other building materials. Reductions in the rate on citrus fruits and copper bullion, which were not in effect during the whole of the previous year, accounted for a loss of nearly \$1,000,000 in revenue. The average rate per ton mile was therefore reduced from 1.44 cents to 1.40 cents, with but a slight increase in revenue tons carried one mile.

While the decrease in revenue passengers carried one mile by the principal railroads of the country approximated 5 per cent. below the preceding year, the decrease on your lines was nearly 5½ per cent., the average revenue earned per passenger mile on all class one railroads of the country being 2.978 cents, and on your lines 2.931 cents. The principal shrinkage in passenger revenue was on the lines west of El Paso and reflects the same unfavorable conditions in California that resulted in a reduction of freight revenue, in addition to which rate reductions ordered by the Interstate Commerce Commission to, from, and between points in the states of New Mexico, Arizona, and Nevada became

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effective early in the year (equivalent to more than \$1,300,000 per annum) which accounts for 22 per cent. of the total shrinkage of passenger earnings and represents a loss of net revenue. There were no important conventions on the Pacific Coast last year to create trans-continental travel, but of the total decline in passenger earnings 59 per cent. consisted of strictly local business, which was due to reduction of travel resulting from the unfavorable crop and business conditions and to the steadily increasing competition of motor vehicles that is no longer confined to short distances. A reduction of more than 7 per cent. in incidental revenue, which includes revenue from excess baggage, dining cars, restaurants, etc., was the natural result of diminished travel.

Competition of the Panama Canal steamship lines for freight traffic is acute and has now extended to the transportation of passengers.

As a result of the unfavorable conditions above described, the total operating revenue of your lines was 4.64 per cent. less than during the preceding year.

Maintenance of Way and Structures decreased \$2,253,991.71 or 5.42 per cent. The property was maintained quite up to the Company's usual high standard. Materials used in repairs and renewals during the past four years compare as follows:

	Material Used in Repairs and Renewals			
	1924	1923	1922	1921
New steel rail, track miles..	401.03	453.37	286.16	427.43
Ties, number	3,969,255	3,952,581	4,022,549	4,721,542
Ties, number per mile.....	222	244	251	296
Tie-plates, number.....	4,730,991	5,093,818	3,866,090	4,112,875
Piling, lineal feet.....	378,742	611,528	341,416	847,817
Lumber, feet b.m.....	25,339,077	21,417,664	22,958,492	23,557,715

Charges for depreciation and retirements increased \$1,671,017.18, or 28.26 per cent., reflecting the effect of equipment additions at market prices far higher than those of former years. Equipment maintenance otherwise decreased 11.02 per cent., transportation service locomotive mileage decreased 4.39 per cent., car mileage remaining practically the same as in previous year.

Traffic expenses increased \$161,621.57, or 3.18 per cent.

Transportation expenses decreased \$50,112.63, or 0.05 per cent. Higher wage rates to transportation employees caused an increase of \$1,158,000, and higher prices of fuel an increase of \$2,769,000, a total of \$3,927,000. Otherwise, transportation expenses would have shown a decrease of \$3,977,000, or 4 per cent. Train mileage decreased 2.63 per cent., passengers carried one mile decreased 5.40 per cent., and ton mileage of freight was practically the same as in previous year. Passengers carried per train decreased 4.15 per cent., as maintenance of adequate service for the public prevented greater reduction of train mileage to meet the decline in passenger traffic. Tons of freight carried per train increased 3.81 per cent.

Economy in the use of fuel became more important than in 1923 because of the advance in prices of fuel oil used by locomotives. It is gratifying to observe that steady improvement in the use of fuel has been obtained during the year, the saving resulting from the economical use of fuel in 1924 compared with 1923 amounting to \$1,714,020, and in 1924 compared with 1913, to \$9,159,850.

Miscellaneous Operations decreased \$261,380.56, or 5.99 per cent.

General Expenses increased \$719,744.85, or 8.29 per cent., the largest item of increase being \$546,867.45 in Relief Department expenses incident to the group life insurance plan placed in effect January 1, 1924, as announced in last year's annual report. The first year's operations under this plan have fully met all expectations and the low cost of this insurance has been reduced by a substantial dividend, which has been shared pro-rata by participating employees and by the Company.

Railway Tax Accruals decreased \$642,840.67, or 3.13 per cent., this being the first reduction in taxes enjoyed since 1918.

Income Account

SOUTHERN PACIFIC COMPANY AND TRANSPORTATION SYSTEM COMPANIES, COMBINED
(Excluding offsetting accounts.)

	Year Ended December 31, 1924	+Increase —Decrease	Per Cent.
Operating Income			
1. Net railway operating income	\$48,101,415.72	— \$6,126,607.76	11.30
Nonoperating Income			
2. Income from lease of road....	\$90,657.50	+ \$2,513.90	2.85
3. Miscellaneous rent income....	1,110,185.30	+ 100,532.76	9.96
4. Miscellaneous nonoperating physical property.....	261,024.16	— 39,436.55	13.13
5. Separately operated properties—Profit	—	16,888.75	.....
6. Dividend income.....	2,787,676.69	— 1,655,493.31	37.26
7. Income from funded securities—Bonds and notes—Affiliated and other companies.....	3,042,240.85	— 741,532.94	19.60
8. Income from funded securities—Investment advances—Affiliated companies.....	2,809,817.75	+ 548,221.52	24.24
9. Income from unfunded securities and accounts.....	1,084,931.21	+ 575,655.27	113.03
10. Income from sinking and other reserve funds	925,102.29	+ 37,529.75	4.23

	Year Ended December 31, 1924	+Increase —Decrease	Per Cent.
11. Miscellaneous income.....	385,440.01	+ 304,390.51	375.56
12. Total nonoperating income..	\$12,497,075.76	— \$884,507.84	6.61
13. Gross income.....	\$60,598,491.48	— \$7,011,115.60	10.37
Deductions from Gross Income			
14. Rent for leased roads.....	\$232,967.88	— \$6,139.76	2.57
15. Miscellaneous rents.....	743,735.04	— 18,267.39	2.40
16. Miscellaneous tax accruals...	130,092.39	— 412,474.82	76.02
17. Interest on funded debt—Bonds and notes.....	21,978,827.27	+ 1,838,213.36	9.13
18. Interest on funded debt—Non-negotiable debt to affiliated companies	1,112,355.35	+ 77,247.61	7.46
19. Interest on unfunded debt....	392,904.72	+ 295,781.97	304.34
20. Amortization of discount on funded debt.....	72,736.96	— 3,825.74	5.00
21. Maintenance of investment organization	28,275.80	+ 4,899.99	20.96
22. Miscellaneous income charges.	152,180.50	+ 11,515.88	8.19
23. Total deductions from gross income	\$24,844,075.91	+ \$1,786,951.10	7.75
24. Net income.....	\$35,754,415.57	— \$8,798,066.70	19.75
Disposition of Net Income			
25. Income applied to sinking and other reserve funds.....	\$1,203,379.18	+ \$38,195.76	3.28
26. Income appropriated for investment in physical property	191,307.62	— 181,040.70	48.62
27. Total appropriations.....	\$1,394,686.80	— \$142,844.94	9.29
28. Income balance transferred to credit of profit and loss....	\$34,359,728.77	— \$8,655,221.76	20.12
29. Per cent. earned on average amount of outstanding capital stock of Southern Pacific Company:			
(a) Railroad income.....†	8.03	— 2.18	21.35
(b) Other income.....†	2.21	— .52	19.05
(c) Total	10.24	— 2.70	20.87

* Includes \$2,174,471.86 representing entire net income for the year from operation of Houston & Texas Central R. R. Co., although about 24 per cent. of the capital stock of said company is now held by the public, as explained in another part of this report. † In arriving at the figures for per cent. of railroad income and per cent. of other income on outstanding capital stock (line No. 29), an estimated apportionment of net income (line No. 24) was made by allocating to railroad income, as nearly as possible, the items relating solely to that class, and to other income the items relating solely to that class, the remaining items being apportioned between the two classes on an estimated basis.

Income Account

NONOPERATING INCOME

The increase in the account Miscellaneous Rent Income is due, principally, to increase in ground rent received from industrial concerns.

The increase in the account Income from Funded Securities—Investment Advances is the result of crediting to income this year past due interest on investment advances to Affiliated Companies earned by such Affiliated Companies during the year, such interest being taken into the income account of Southern Pacific Company only when it has been earned, as explained below.

Of the increase in the account Income from Unfunded Securities and Accounts about \$233,000 represents interest received on proceeds from the sale of Equipment Trust Certificates deposited with Trustees, and the remainder represents increase in interest on company's own funds used for construction.

The increase in the account Miscellaneous Income is due, principally, to the amount received by Southern Pacific Company from the other joint owners of the Associated Pipe Line (the Associated Oil Company and the Pacific Oil Company) to equalize the use of such pipe line.

DEDUCTIONS FROM GROSS INCOME

The decrease in the account Miscellaneous Tax Accruals is the result, principally, of including in that account last year, taxes on certain property which, under the regulations of the Interstate Commerce Commission are included this year in Railway Tax Accruals.

The increase in Interest on Funded Debt—Bonds and Notes is made up principally of \$1,110,083 representing the difference between a full year's interest in 1924 and the amount of interest accruing in 1923 on the \$23,100,000 of Equipment Trust Certificates—Series F, issued in December 1923; of \$541,450 representing interest accruing during the year on Equipment Trust Certificates—Series G, issued in May, 1924; of \$245,000 representing interest accruing during the year on the \$29,400,000 of Twenty-Year 5% bonds issued in connection with the acquisition of the El Paso and Southwestern lines; and of \$45,256 interest accruing during November and December 1924, on bonds of El Paso & Southwestern lines held by the public; less \$104,177 representing decrease in interest on account of Equipment Trust Certificates retired during the year.

The increase in Interest on Unfunded Debt represents, princi-

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pally, interest on deferred payments for terminal property acquired during the year.

The dividends paid for 1924 were appropriated from the profit and loss surplus and therefore do not appear in the income account.

Payments for 1924 amounted to \$20,943,094.32 compared with \$20,663,094.32 for 1923. The increase of \$280,000 represents the proportion of dividends for November and December, 1924, on the \$28,000,000 of capital stock issued in connection with the acquisition of the El Paso and Southwestern lines. The figures for both this year and last year include \$240, representing dividends on stocks of Transportation System Companies held by the public.

The Southern Pacific Company does not take into its income account interest on advances to Affiliated Companies for the construction and acquisition of new lines until the principal of such advances, with interest, has been repaid either in cash, or in stocks and bonds of such companies, the interest included in the cost of such new lines being the amount authorized to be charged thereto under the regulations of the Interstate Commerce Commission. All other interest due from Affiliated Companies (including both interest on advances and interest on bonds of such companies owned by Southern Pacific Company) is taken into the income account of the Southern Pacific Company only when it has been earned by the Affiliated Companies.

Capital Stock and Funded Debt

On May 1, 1924, to provide for the construction and acquisition of new rolling stock, an equipment trust, known as "Southern Pacific Company Equipment Trust, Series G," was created, and an issue of \$17,640,000, par value, Five Per Cent. Equipment Trust Certificates authorized, all of which were issued during the year. The certificates are dated May 1, 1924, and mature serially in lots of \$1,176,000 on May 1 of each year from 1925 to 1939, both inclusive. In accordance with the terms of the trust all certificates were guaranteed by the Southern Pacific Company.

On June 20, 1924, the Executive Committee of the Southern Pacific Company authorized the issue of \$28,000,000 of capital stock, and \$29,400,000 of Twenty-Year Five Per Cent. (Collateral Trust) Gold Bonds, to be issued in exchange for stocks, bonds, and indebtedness representing the control of the El Paso & Southwestern System of railroads, as more fully explained in another part of this report. The said stock and bonds were issued on October 31, 1924. The bonds are dated May 1, 1924, and are payable May 1, 1944, with interest at the rate of five per cent. per annum, payable semi-annually on April 1 and November 1. The trustee under the indenture is The Hanover National Bank of the City of New York.

Balance Sheet

SOUTHERN PACIFIC COMPANY AND TRANSPORTATION SYSTEM COMPANIES, COMBINED ASSETS—EXCLUDING OFFSETTING ACCOUNTS

Assets	December 31, 1924	+ Increase — Decrease
Investments	\$1,258,253,731.59	\$141,868,179.94
Investment in road and equipment...	193,510.02	175,548.15
Improvements on leased railway prop- erty	18,375,660.14	146,403.03
Sinking funds	893,057.42	17,303,793.00
Deposits in lieu of mortgaged property sold	16,914,246.58	69,212.31
Miscellaneous physical property	297,401,874.87	9,020,931.32
Investments in affiliated companies:	154,409,543.89	5,043,107.64
Stocks	56,968,034.11	47,780,317.37
Bonds } Cost inseparable	28,922,467.79	1,071,588.52
Notes	155,342,619.77	19,482,625.63
Advances	1,589,872.01	22,580.00
Other investments:	16,435,005.38	21,513,817.68
Stocks	1,620,708.10	63,403.21
Bonds	132,942.24	47,717.10
Notes	825,355.26	618,515.55
Miscellaneous	\$2,008,278,629.17	\$183,864,386.93
Total		
Current Assets		
Cash	\$26,033,638.23	\$5,580,159.97
Demand loans and deposits	12,850.59	\$3,001,018.26
Special deposits	317,579.81	10,617.91
Loans and bills receivable	688,901.90	585,569.94
Traffic and car-service balances re- ceivable	2,757,168.87	55,175.68
Net balance receivable from agents and conductors	3,107,896.68	505,957.36
Miscellaneous accounts receivable	7,492,251.34	330,356.97
Material and supplies	30,496,819.64	5,392,473.92
Interest and dividends receivable	2,516,947.08	24,042.10
Rents receivable	5,833.33	233,746.55
Other current assets	198,575.06	137,144.10
Total	\$73,628,462.53	\$3,503,567.12
Deferred Assets		
Working fund advances	\$140,473.20	\$2,525.17
Insurance and other funds	25,360.00	
Other deferred assets	14,476,233.87	\$970,805.49
Total	\$14,642,067.07	\$968,280.32
Unadjusted Debits		
Rents and insurance premiums paid in advance	\$155,630.45	\$24,349.04
Discount on capital stock	3,988,600.00	
Discount on funded debt	1,721,181.94	72,736.96
Other unadjusted debits	11,332,362.35	1,998,685.82
Securities issued or assumed—Un- pledged*	2,488,425.00	
Securities issued or assumed—Pledged*	102,750.00	
Total	\$17,197,774.74	\$2,095,771.82
Grand total	\$2,113,746,933.51	\$179,233,328.31

* Excluded from total assets, and a corresponding amount excluded from outstanding funded debt, in accordance with regulations of the Interstate Commerce Commission.

SOUTHERN PACIFIC COMPANY AND TRANSPORTATION SYSTEM COMPANIES, COMBINED LIABILITIES—EXCLUDING OFFSETTING ACCOUNTS

Liabilities	December 31, 1924	+ Increase — Decrease
Capital stock of Southern Pacific Com- pany	\$372,380,905.64	\$28,000,000.00
Capital stock of Transportation System Companies	382,254,900.00	35,422,000.00
Total stock outstanding	\$754,635,805.64	\$63,422,000.00
Premium on capital stock of Southern Pacific Company	\$6,304,440.00	
Total	\$760,940,245.64	\$63,422,000.00
Long Term Debt		
Funded debt unmatured:		
Book liability	\$659,636,543.42	\$64,062,312.66
Less held by or for companies	2,591,175.00	
Actually outstanding:		
Southern Pacific Company	\$203,181,960.00	\$44,968,200.00
Transportation System Companies	453,863,408.42	19,094,112.66
Total funded debt	\$657,045,368.42	\$64,062,312.66
Nonnegotiable debt to affiliated companies:		
Open accounts	37,718,421.01	5,967,427.75
Total	\$694,763,789.43	\$70,029,740.41
Current Liabilities		
Loans and bills payable	\$50,000.00	\$50,000.00
Traffic and car-service balances payable	5,113,950.37	473,879.61
Audited accounts and wages payable	15,691,577.60	2,138,081.22
Miscellaneous accounts payable	1,365,572.87	89,197.64
Interest matured unpaid	4,118,339.41	47,485.63
Dividends matured unpaid	5,670,766.45	417,267.32
Funded debt matured unpaid	20,713.92	7,000.00
Unmatured dividends declared	600,000.00	600,000.00
Unmatured interest accrued	5,300,333.78	481,543.53
Unmatured rents accrued	90,019.61	234,875.40
Other current liabilities	1,481,313.31	619,102.94
Total	\$39,502,587.32	\$1,773,445.05
Deferred Liabilities		
Liability for provident funds	\$18,774.31	\$13,774.31
Other deferred liabilities	1,445,317.17	1,107,248.20
Total	\$1,464,091.48	\$1,126,022.51
Unadjusted Credits		
Tax liability	\$14,561,817.57	\$1,457,286.64
Insurance and casualty reserves	2,906,703.68	275,001.63
Operating reserves		3,439,391.10
Accrued depreciation—Road	2,221,836.84	158,166.44
Accrued depreciation—Equipment	78,009,570.41	11,997,686.62
Other unadjusted credits†	130,466,146.99	9,862,677.58
Total	\$228,166,075.49	\$20,311,427.81
Corporate Surplus		
Additions to property through income and surplus	\$7,452,270.92	\$1,272,777.33
Funded debt retired through income and surplus	25,844,110.29	609,114.80
Sinking fund reserves	14,375,028.12	192,479.50
Appropriated surplus not specifically invested	3,818,177.83	
Total appropriated surplus	\$51,489,587.16	\$2,074,371.63
Profit and loss—Balance	337,420,556.99	24,043,211.00
Total corporate surplus	\$388,910,144.15	\$26,117,582.63
Grand total	\$2,113,746,933.51	\$179,233,328.31

† Represents, principally, interest on advances to Affiliated Companies, which has not been taken into income account. See last paragraph under heading "Deductions from Gross Income."

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Road and Equipment

During the five years 1920 to 1924, inclusive, the expenditures of the Southern Pacific Company and its Transportation System Companies, for extensions and branches, new equipment, and additions and betterments have aggregated \$195,310,007.26, as follows:

Extensions and Branches	\$ 10,688,172.42
Equipment	105,598,590.46
Other Additions and Betterments.....	79,023,244.38
Total	\$195,310,007.26

During the same period the companies have retired bonds held by the public, of an aggregate par value of \$33,842,019. This addition to the road and equipment, and the reduction of outstanding funded obligations, the whole aggregating \$229,152,026.26, was accomplished by the issue of securities (equipment trust certificates and equipment notes) aggregating only \$58,554,000, the remainder being provided for out of the proceeds from the sale of the California Oil properties and from accumulated surplus.

The foregoing does not include the Southern Pacific Company's one-half of new equipment purchased by the Pacific Fruit Express Company during the said five year period, the total cost of which was \$52,616,736.79, of which \$15,800,000 was provided for by equipment trust certificates sold to the public, the remainder being provided by the parent companies.

The ocean-going passenger and freight steamer (the "Bienville") mentioned in last year's report, was completed during the year, and, under provisional acceptance, started on her maiden voyage on January 3, 1925. While docked at New Orleans on March 19, 1925, for replacement of a damaged shaft, the vessel was partially destroyed by fire; a survey is being made to determine the extent of the damage. She is fully covered by insurance.

A new freight steamship, the "El Oceano," built during the year, was launched at Kearny, N. J., on February 14, 1925. She is expected to enter the service between New York and Galveston during the month of April. The vessel has a deadweight cargo capacity of 7,170 net tons and will be the largest freight carrier in the line. Of three new ferry steamers ordered during the year for the new automobile ferry service between San Francisco and Richmond, Calif., established to accommodate the increasing trans-bay automobile traffic, one, the "El Paso," was placed in service December 31, 1924, and the other two, the "New Orleans" and "Klamath," have been placed in service since the close of the year.

The steamships "Excelsior" and "Chalmette," which were operated for many years between New Orleans and Havana, were sold and delivered to purchasers on February 1, 1924, on account of the continuous loss attributable to the low average freight rate between New Orleans and Havana and the high cost of operating these steamers.

Acquisition of Capital Stock of Industrial Development and Land Company and of Industrial Terminal Railway Company

The Southern Pacific Company has acquired all the outstanding capital stock of the Industrial Development and Land Company and of the Industrial Terminal Railway Company, California corporations, which own approximately thirty-seven and one-half acres of real estate in the City of Los Angeles. This real estate adjoins property owned by the Southern Pacific Company and is a very valuable addition to the Company's holdings of terminal real estate in Los Angeles.

Natron Cut-Off

In last year's annual report mention was made of the plans for completing the gap in the Natron Cut-Off, involving the construction of 107.78 miles of main line and 29 miles of sidings over the Cascade Mountains between Kirk and Oakridge, Oregon. All the right-of-way has been acquired and contracts have been let for the construction of the entire line. At the close of the year, 45.06 miles of the main line and 10.39 miles of sidings had been completed, of which 36.84 miles of main line and 9.77 miles of sidings extending from Kirk toward Oakridge, and 6.07 miles of main line and .62 miles of sidings extending from Oakridge toward Kirk, were placed in operation during the year. Of the 62.72 miles of line still to be completed all the right-of-way has been cleared, 31 miles have been graded ready for ties and rails, and the grading and tunnel work on the remaining 31.72 miles is progressing.

Double Tracking Central Pacific Between Oakland and Ogden

Of the 52.50 miles of second track on the line between Oakland and Ogden, mentioned in last year's report as being under construction, 18.49 miles of track were completed during the year, while at the close of the year 8.44 miles additional had been graded ready for ties and rails, and 9.29 miles of grading were nearing completion. This work involves the construction of eight new tunnels having an aggregate length of 14,192 feet, and the enlarge-

ment of existing tunnel No. 13 having a length of 862 feet. The estimated cost of this work is \$9,290,000, of which amount the sum of \$3,854,000 was expended during the year. When completed, a continuous double track will be in use for 249 miles out of San Francisco.

The paired track arrangement, mentioned in last year's annual report, under which the Southern Pacific and the Western Pacific are to operate their tracks between Alazon and Weso, Nevada, as a double track railroad, thus giving each company the benefit of double track service for 178 miles between such points, was placed in operation on August 1, 1924, and has proven very satisfactory.

Acquisition of Control of the El Paso & Southwestern System Through Stock Ownership and Lease

Pursuant to an order of approval and authorization from the Interstate Commerce Commission the Southern Pacific Company acquired control, on October 31, 1924, of the El Paso & Southwestern system of railroads. This system extends from Tucson, Arizona, to a connection with the Chicago, Rock Island & Pacific at Tucumcari, New Mexico, with various branches, aggregating 1,139.90 miles. At the same time, in like manner, it also obtained control of the Nacozari Railroad Company, a subsidiary of the El Paso & Southwestern in the Republic of Mexico, which extends 77 miles from Agua Prieta to Nacozari. The control thus effected consists of the acquisition of all the capital stock of the El Paso & Southwestern Railroad Company and of its subsidiaries and of the lease of the physical properties thereof in the United States. That is to say, stock ownership gives this Company corporate control, and by leases it has operating control. The leased lines are being operated as a part of our Pacific System.

The consideration paid for such control was \$28,000,000 of the capital stock of the Southern Pacific Company, received at par, and \$29,400,000 of its 20-Year, 5% Collateral Trust Gold Bonds. These bonds and stock were issued in exchange for the capital stock of the railroad companies owning the El Paso & Southwestern System lines and other assets and bonds. As will be pointed out below, under the heading of General Remarks, this Company expects from control to realize very substantial savings in operating expenses, interest, taxes, etc.

Construction of Additional Lines by Arizona Eastern Railroad Company

At the same time that this Company was authorized to acquire control of the El Paso & Southwestern System the Arizona Eastern Railroad Company, all of whose stock except directors' qualifying shares is owned by Southern Pacific Company, was authorized by the Commission, in a connected proceeding, to construct certain lines aggregating 172.50 miles, viz: a line extending from Picacho, Ariz., on the Southern Pacific Railroad, to Chandler, Ariz., on the Chandler Branch of the Arizona Eastern (50.50 miles); a branch from a point on the above line near Gila River to Florence, Ariz. (7 miles); and a line extending from the western terminus of the Arizona Eastern's Hassayampa Branch at Hassayampa, Ariz., to the main line of the Southern Pacific Railroad near Dome, Ariz. (115 miles). The work of constructing these new lines was begun October 1, 1924. It is expected that the work will be completed within the time limit fixed by the Commission's order, which was December 31, 1926.

Lease of Arizona Eastern Railroad and Phoenix & Eastern Railroad by Southern Pacific Company

The lines of the Arizona Eastern Railroad Company and of the Phoenix & Eastern Railroad Company, comprising about 382 miles, all in the State of Arizona, which constitute branches from points on the main line of the Southern Pacific Railroad, have been operated heretofore by the Arizona Eastern Railroad Company as a separate unit of the general Southern Pacific Transportation System. To bring about operating economies and increased efficiency, this Company applied to the Interstate Commerce Commission, in November, 1923, for authority to lease these lines. By an order effective November 8, 1924, this authority was granted. Accordingly the authorized lease was made on the effective date of the order, and the lines of the Arizona Eastern and of the Phoenix & Eastern have since been operated as a part of the Pacific System of this Company.

General Remarks Upon the Foregoing Acquisition of Control, New Construction, and Leases

The new construction and union of the El Paso & Southwestern lines with the Southern Pacific lines will avoid the cost of constructing a second line between Dome, Ariz., and El Paso, Texas, a distance of 544 miles. The necessity for this double tracking was imminent, since the traffic between the points named was becoming more than could be economically or efficiently handled over a single track; but the purposes of such a second track will now be served by the lines of the El Paso & Southwestern and the new lines to be constructed, which together will provide a second

track for all except 55 miles of the entire distance between Yuma and El Paso, and with more favorable grades and alignment. The inclusion of El Paso & Southwestern lines in our system, in connection with the new construction, will also place Phoenix, the capital of Arizona, on the main line, provide service for the rich irrigated Salt River Valley, and shorten already existing hauls to important sources of traffic. The cost of the new construction is estimated at \$14,138,000; the cost of the double tracking avoided thereby is estimated at \$25,672,000.

Without enumerating in detail the advantages of the acquisition of the El Paso & Southwestern lines, of the new construction, and of the unified operation through the leases, we estimate that, in addition to enjoying the net income of the El Paso & Southwestern properties, which has averaged \$3,000,000 per annum for the last ten years, and the net income from additional traffic derived from the new line through Phoenix, the Southern Pacific will profit by the large annual savings in administration and operating expenses and other economies to result from the unification, and it may also regard as gain the annual net amount of interest, taxes, and maintenance which will be saved by avoiding the construction of 544 miles of second track. We believe that these combined savings will nearly equal the annual interest on the collateral trust bonds and the dividends, at current rate, on the capital stock given in exchange for the El Paso & Southwestern properties.

Litigation Between Southern Pacific Company and Minority Stockholders of Houston & Texas Central Railway Company, Predecessor of Present Houston and Texas Central Railroad Company

The reorganization of the Houston and Texas Central Railway Company, which took place in 1889, has ever since that date been the subject of attack by minority stockholders. The first six suits were successfully defended; but in the seventh, known as the "Bogert suit," the plaintiffs were, on October 5, 1916, decreed to be entitled to receive from the Southern Pacific Company the same proportion of the stock of the new Houston & Texas Central Railroad Company that they owned in the old. In order to obtain the new stock they were, however, required to reimburse the Southern Pacific Company for their proportion of the reorganization expenses. This decree was based upon the finding that by the reorganization the Southern Pacific Company had acquired the stock of the new Company on more favorable terms than had been offered to the plaintiffs. This decree was so modified by the Supreme Court of the United States that the plaintiffs were required, in order to obtain their proportion of the new stock, to pay a like proportion not only of the reorganization expenses but also of the debts of the old Company due to the Southern Pacific Company, which the latter had lost in the reorganization period. By this modification the amount payable by the plaintiffs was more than doubled. In an ancillary accounting proceeding instituted by the plaintiffs it was held that in all inter-company dealings since the reorganization the Houston & Texas Central Railroad Company had been fairly treated by the Southern Pacific Company. On December 20, 1924, a final decree was entered, and pursuant thereto, two days later, the plaintiffs received from the Southern Pacific Company 24,219 shares of stock in the Houston & Texas Central Railroad Company, paying therefor \$60.021 per share.

Controversy Arising Out of the Oregon and California Railroad's Land Grant

This is an accounting suit brought in 1917 by the United States seeking to offset against the compensation of \$2.50 per acre, due the Company for the unsold lands, moneys received by the Company, in excess of \$2.50 per acre, by reason of past sales, leases and otherwise, as well as taxes levied since the forfeiture decision in 1913 and voluntarily paid by the Federal Government to the State of Oregon. When our last year's report was issued this case was being heard in the United States District Court of Oregon. Since then the hearing has been concluded and the case submitted upon oral argument and printed briefs. A decision by the District Court may be expected at any time.

Southern Pacific Railroad Company of Mexico

Mention was made in last year's annual report of the agreement dated March 2, 1923, between the Southern Pacific Railroad Company of Mexico and the Mexican Government, under which the Railroad Company, in partial settlement of its claims, received notes of the Mexican Government aggregating 13,600,000 pesos, payable at the rate of 2,400,000 pesos per annum. During the year all maturing notes, together with the interest thereon, were paid; and additional notes and cash were received from the Mexican Government covering the remainder of the Railroad Company's claims after adjustments agreed upon with the Government, except certain claims for transportation, aggregating about 856,000 pesos, which are still pending.

As stated in last year's report your Mexican Company agreed with the Mexican Government to complete the 103-mile gap in

the main line between Tepic and La Quemada; and to rehabilitate the Alamos and Tonichi Branches which had been badly damaged by revolutionary forces.

On the gap in the main line 17.08 miles of track had been completed to December 31, 1924 (when track laying was temporarily suspended awaiting the completion of three short tunnels), 35.71 miles of grading had been completed ready for ties and rails, 32.49 miles of grading were nearing completion, and 15.00 miles of right-of-way had been cleared ready for grading. Since the close of the year the three tunnels mentioned above have been substantially completed, and track laying on a stretch of about 60 miles, which is free from high bridges and tunnels, is progressing. No part of the new line has been ballasted as the best ballast is ahead of the rails, but as soon as it is reached ballasting will be started at Tepic and pushed rapidly to keep pace with the track laying. At the end of the year 4,262 men were employed upon this construction.

The Alamos Branch was reopened for traffic on June 1, 1924, and the Tonichi Branch on December 24, 1924.

In the annual report for 1922 mention was made of the fact that the Mexican Government had taken the position that the unpaid portion of subsidy provided for in the concession under which the line south of Navojua was built will not become due until all structures characterized by Government engineers as "temporary" shall have been replaced with permanent structures. Fully 95 per cent. of the bridges that were destroyed in the various revolutions have been replaced with permanent structures to meet Government specifications. Furthermore, for the past two years as they have required renewal temporary piers in river and stream crossings have been replaced with masonry or cylinder piers and culverts with concrete, steel, or rubble masonry.

This has made a great improvement in the condition of the line south of Navojua, and it is the intention to have this portion of the line conform reasonably close to the Government's requirements as to permanent structures by the time the entire line is open for through traffic, about the summer of 1926, and to conform to them completely within ten years thereafter, or 1936. Under its concession \$1,034,167 of subvention in American money will become due on completion of the gap from Tepic to La Quemada, and \$3,512,698 American money will become due when all structures between Orendain and La Quemada and between Tepic and Navojua shall have been replaced in permanent form.

During 1924 the gross income (after deduction of operating costs) of Southern Pacific Railroad Company of Mexico amounted to \$1,192,956.44. Excluding interest accruing to Southern Pacific Company and Southern Pacific Railroad Company, and the annual charge for amortization to provide a reserve for the retirement of the investment in the property at the expiration of the life of the concession, under the appropriate provision of the Mexican law, the deductions from gross income amounted to \$256.84, which would leave a net income for the year of \$1,192,699.60, or the equivalent of a 2.56 per cent. on the investment (excluding interest) of the Southern Pacific Company and the Southern Pacific Railroad Company in the property.

The total miles of road operated at December 31, 1924, was 1,248.76; and the average mileage operated during the year was 1,197.40 compared with 1,131.31 for 1923.

General

The dividends for the year on the capital stocks of the Southern Pacific Company and its Transportation System Companies held by the public amounted to \$20,943,094.32, as follows:

Dividends on capital stock of the Southern Pacific Company:

1½ per cent. paid April 1, 1924.....	\$5,165,713.58
1½ per cent. paid July 1, 1924.....	5,165,713.58
1½ per cent. paid October 1, 1924..	5,165,713.58
1½ per cent. payable January 2, 1925	5,445,713.58

Total Southern Pacific Company.....\$20,942,854.32

Dividends on stocks of Transportation System Companies held by the public.....	240.00
--	--------

Total dividend payments for the year.....\$20,943,094.32

The total taxes for the year amounted to...\$19,867,104.43

Under the pension system put into effect January 1, 1903, there were carried on the pension rolls at the end of the year, 1486 employees. The payments to pensioners for the year amounted to \$758,643.89, equivalent to six per cent. per annum on an investment of \$12,644,064.83.

The Board gratefully acknowledges its appreciation of the loyal and efficient services rendered by officers and employees during the year.

By order of the Board of Directors,

JULIUS KRUTTSCHNITT,
Chairman of the Executive Committee.

[ADVERTISEMENT]

Eighth Annual Report of Missouri Pacific Railroad Company

Year Ended December 31, 1924

St. Louis, Mo., March 10, 1925.

To the Stockholders:

The Board of Directors herewith submits report of the operations and affairs of the Company as of December 31, 1924.

Corporate Income Statement

FOR THE YEAR ENDED DECEMBER 31, 1924, COMPARED WITH THE PREVIOUS YEAR

	1924	1923	Increase
Railway Operating Revenues..	\$123,647,723.62	\$114,607,947.73	\$9,039,775.89
Railway Operating Expenses...	98,466,365.51	97,939,965.67	526,399.84
Net Revenue Railway Operations	\$25,181,358.11	\$16,667,982.06	\$8,513,376.05
Railway Taxes and Uncollectible Railway Revenue	\$4,735,894.37	\$4,482,564.67	\$253,329.70
Railway Operating Income.....	\$20,445,463.74	\$12,185,417.39	\$8,260,046.35
Other Operating Income.....	845,354.41	745,543.21	99,811.20
Total Operating Income.....	\$21,290,818.15	\$12,930,960.60	\$8,359,857.55
Deductions from Operating In- come	5,473,233.95	4,037,715.27	1,435,518.68
Net Railway Operating Income..	\$15,817,584.20	\$8,893,245.33	\$6,924,338.87
Non-Operating Income	3,566,861.17	3,401,517.72	165,343.45
Gross Income	\$19,384,445.37	\$12,294,763.05	\$7,089,682.32
Deductions from Gross Income..	12,881,227.81	12,173,417.33	707,810.48
Balance-Net Income transferred to Profit and Loss.....	\$6,503,217.56	\$121,345.72	\$6,381,871.84

Guaranty Period

The Interstate Commerce Commission determined the amount to make good to the company the guaranty by the United States Government for the Guaranty Period March 1, to August 31, 1920, under the terms of Section 209 of the Transportation Act of 1920, to be \$13,243,448.73; of this amount there had been previously paid to the company \$12,583,000.00 and the balance \$660,448.73 was received during the year in final settlement.

Income

A brief comparative statement of the Corporate Income is shown above, subdivided to indicate the "Net Railway Operating Income" defined in the Transportation Act of 1920.

Operations

(Compared with Previous Year)

The results from operations for the year show a decided increase in volume of freight traffic handled and in gross revenue received.

Total Railway Operating Revenues for the year were \$123,647,723.62, an increase of \$9,039,775.89 or 7.89%.

The increase in Freight Revenue amounted to \$9,987,976.85, or 11.62%.

The total Number of Tons of Revenue Freight Handled increased 12.22%, while the Ton Miles increased 18.29%.

The Average Revenue Per Ton Mile was 10.94 mills, as compared with 11.59 mills in the previous year.

The increase in tonnage handled under Products of Agriculture was 19.27%; Animals and Products 4.61%; Products of Mines 18.74%; Manufactures and Miscellaneous 13.67%. There was a decrease in total Products of Forests of 4.43%. The increase in Freight Revenue from Bituminous Coal, Crude Petroleum and Refined Petroleum and its products was somewhat in excess of \$5,000,000.

The decrease in Passenger Revenue amounted to \$1,445,193.78, or 7.62%.

The Number of Revenue Passengers shows a decrease of 10.50%, while the Number of Passenger Miles decreased 6.46%, with an increase of Average Haul per Passenger of 4.53%. The loss in Passenger Revenue is all attributable to the decrease in local travel by reason of the good roads and greater use of automobiles and buses by the traveling public.

The Average Revenue Per Passenger Per Mile was \$0.0342 as compared with \$0.0347 last year.

Total Railway Operating Expenses increased but 0.54%, notwithstanding the large increase in the volume of traffic handled and that it was impossible to make a decrease in passenger train mileage to offset the decrease in passenger earnings.

The ratio of Maintenance of Way and Structures expenditures to Total Operating Revenue was 15.30%, an increase of 0.93% compared with the previous year, while the ratio of expenditures for Maintenance of Equipment to Total Operating Revenues, was 20.90%, a decrease of 5.56%, the result of the improved condition of the rolling stock.

The increase in Hire of Equipment Charges was occasioned by the large increase in perishable freight and oil traffic both of which are handled in cars belonging to private car lines. This result notwithstanding miles per car per day increased from 21.76 in 1922 and 26.61 in 1923 to 33.02 in 1924.

Capital Stock

No changes have been made in the Capital Stock during the year.

Funded Debt

Long Term Debt outstanding in the hands of the public increased \$20,454,520.

First and Refunding Mortgage Bonds, Series D, to the amount of \$700,000 were issued to apply on the purchase of terminal property at Kansas City and Leavenworth, Kansas, from the Kansas City Northwestern Railway Company. Of this amount \$100,000 was subsequently returned to the treasury as a distribution of surplus of the Kansas City Northwestern Railway Company, of which this Company was a part owner.

Three-Year 5% Secured Gold Notes to the amount of \$12,000,000 were issued during the year, and are secured by \$15,500,000 principal amount of First and Refunding Mortgage Bonds, Series D, issued under an order of the Interstate Commerce Commission to reimburse the treasury of the Company for Capital Expenditures.

Fifteen-Year 7% Sinking Fund Notes to the amount of \$5,911,920 were issued during the year in exchange for 49,266 shares of Capital Stock of New Orleans, Texas & Mexico Railway Company. In addition, 37,500 shares of Capital Stock of the New Orleans, Texas & Mexico Railway Company were acquired by the issuance of \$4,500,000 of Fifteen-Month 7% Notes, which are to be exchanged for the Fifteen-Year Notes, of which \$18,000,000 have been authorized.

Payment of \$80,000 Serial Note due the U. S. Government resulted in the release of \$107,000 First and Refunding Mortgage Bonds, Series D, held as collateral.

Equipment Trust Certificates, Series C, were issued for \$3,900,000 to apply on purchase of 50 locomotives, 1,000 automobile cars, 75 cabooses, 4 passenger train cars and 2 work cars. Equipment Trust Obligations amounting to \$1,027,400 matured and were paid during the year.

The Trustee of the First and Refunding Mortgage authenticated and delivered to the Treasurer \$2,548,000 Series D bonds, which were not disposed of during the year. The amount of Unpledged Series D bonds in the Treasury has thus been increased to \$4,880,500 of which \$1,816,000 principal amount are carried as "Investment in Securities Issued, Assumed or Otherwise Carried as a Liability by the Accounting Company" and \$3,064,500 nominally issued.

The Plan and Agreement for the reorganization of The Denver & Rio Grande Western Railroad System, referred to in previous report has been consummated and your Company is now the owner of 150,000 shares of Common Stock of The Denver & Rio Grande Western Railroad Company. Control of The Denver & Rio Grande Western is joint with The Western Pacific Railroad Company, thus forming a through transcontinental line from St. Louis, Mo., to San Francisco, California.

Following the passage of the Transportation Act by Congress, your Directors have given careful consideration to the needs of the territory through which your Company operates and, having in mind the economies possible under unified control and an increase in volume of traffic by the establishment of through routes, negotiations were commenced early in the year for the purchase of the Gulf Coast Lines, which already owned the International-Great Northern Railroad Company. The purchase was approved by the Interstate Commerce Commission, and authority granted for the issue of Fifteen-Year 7% Sinking Fund Notes limited to \$18,000,000, these notes to be used in purchasing the Capital Stock of the New Orleans, Texas & Mexico Railway Company. 86,766 shares were acquired during the year and as the offer to purchase extends to March 15, 1925, an additional amount is expected. This places under direct control of your Company, 2,081 miles of railroad located in Louisiana and Texas and, through direct connection with these properties brings to the Missouri Pacific Railroad a substantial tonnage. It also creates a direct through route to and from the Republic of Mexico, and gives your properties the short line to and from the important cities of Texas.

In the reorganization of the Texas and Pacific Railway Com-

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pany, your Company acquired 237,030 shares of Preferred Stock, in exchange for Second Mortgage Income Bonds, which, added to the 100,000 shares of Common Stock already owned, carries control of that Company, operating 1,953 miles of railroad in Louisiana and Texas.

Road and Equipment

There was delivered and put in service during the year, the following equipment for which orders had been placed prior to December 31, 1923.

25 Mikado Type Freight Locomotives,
10 Pacific Type Passenger Locomotives,
8 Steel Dining Cars,
3 Steel Cafe Club Cars,
27 Steel Coaches,
12 Steel Chair Cars,
17 Steel Suburban Passenger Cars.

Orders have been placed for additional equipment, as follows:

60 Mikado Type Freight Locomotives,
20 Pacific Type Passenger Locomotives,
20 Switching Locomotives,
6 Steel Coaches,
4 Steel Dining Cars,
2 Steel Observation Parlor Cars,
10 Steel Mail Storage Cars,
1 Steel Mail Coach,
9 Steel Mail and Baggage Cars,
10 Steel Baggage Cars,
2 Steel Business Cars,
2,000 Box Cars,

2,000 Automobile Cars,
750 Drop Bottom Gondola Cars,
250 Self-clearing Hopper Cars,
115 Caboosees,
2 Wrecking Derricks,
3 Gasoline Motor Cars for Passenger Service,
4 Locomotive Cranes,
1 Ditcher,
1 Spreader.

Of this Equipment, there was delivered and put in service during the year, 24 Mikado Type Freight Locomotives, 9 Pacific Type Passenger Locomotives and 3 Switching Locomotives, 483 Automobile Cars, 2 Wrecking Derricks, 3 Gasoline Motor Cars, 4 Locomotive Cranes, 1 Ditcher and 1 Spreader. The remaining units will be delivered in 1925.

The details of charges to Road and Equipment are shown on Page 18 (of the pamphlet report) a summary of which follows:

New Lines Purchased.....	\$934,846.31
Road	\$7,397,923.21
Less Retirements	299,512.16
Equipment	\$15,496,513.17
Less Retirements	4,458,048.36
Assets and Liabilities not appraised June 1, 1917.....	Cr. 340,666.90

Total Charges to Road and Equipment..... \$18,731,055.27

By Order of the Board of Directors,
L. W. BALDWIN, President.

General Balance Sheet

DECEMBER 31, 1924, COMPARED WITH DECEMBER 31, 1923				DECEMBER 31, 1924, COMPARED WITH DECEMBER 31, 1923.			
ASSETS		LIABILITIES		STOCK:		LONG TERM DEBT:	
	December 31, 1924	December 31, 1923	Increase or Decrease		December 31, 1924	December 31, 1923	Increase or Decrease
INVESTMENTS:				CAPITAL STOCK:			
Investment in Road and Equipment	\$414,783,732.07	\$396,052,676.80	\$18,731,055.27	Common	\$82,839,500.00	\$82,839,500.00	
Improvements on Leased Railway Property	27,673.13	12,020.67	15,652.46	Preferred	71,800,100.00	71,800,100.00	
Sinking Funds	665.19	734.19	—69.00	Total	\$154,639,600.00	\$154,639,600.00	
Deposits in Lieu of Mortgaged Property Sold.....	64,332.68	23,304.41	41,028.27	LONG TERM DEBT:			
Miscellaneous Physical Property	2,485,988.00	2,348,634.85	137,353.15	Funded Debt Unmatured... ..	\$276,556,200.00	\$255,251,680.00	\$21,304,520.00
Investments in Affiliated Companies—Pledged	29,529,769.65	4,184,958.65	25,344,811.00	Nonnegotiable Debt to Affiliated Companies.....		850,000.00	—850,000.00
Investments in Affiliated Companies—Unpledged	20,149,165.95	7,204,763.96	12,944,401.99	Total	\$276,556,200.00	\$256,101,680.00	\$20,454,520.00
Investment in Securities Issued, Assumed or otherwise carried as a Liability by the Accounting Company—Pledged	4,165,065.10	4,165,065.10		Total Capital Liabilities	\$431,195,800.00	\$410,741,280.00	\$20,454,520.00
Investment in Securities Issued, Assumed or otherwise carried as a Liability by the Accounting Company—Unpledged	1,650,934.90	1,650,934.90		CURRENT LIABILITIES:			
Other Investments—Pledged	375,569.79	15,316,859.20	—14,941,289.41	Loans and Bills Payable... ..	\$4,500,000.00		\$4,500,000.00
Other Investments—Unpledged	1,071,775.91	14,400,743.27	—13,328,967.36	Traffic and Car Service Balances Payable	1,189,185.05	\$1,005,161.85	184,023.20
Total	\$474,304,672.37	\$445,360,696.00	\$28,943,976.37	Audited Accounts and Wages Payable	11,556,099.37	15,976,298.24	—4,420,198.87
CURRENT ASSETS:				Miscellaneous Accounts Payable	407,885.17	496,585.47	—88,700.30
Cash	\$4,887,237.36	\$1,904,094.03	\$2,983,143.33	Interest Matured Unpaid... ..	1,478,631.53	1,137,313.89	341,317.64
Special Deposits	2,706,955.37	3,972,663.15	—1,265,707.78	Funded Debt Matured Unpaid	4,000.00	8,000.00	—4,000.00
Loans and Bills Receivable	745,076.40	80,644.29	664,432.11	Unmatured Interest Accrued	3,395,343.64	3,312,354.34	82,989.30
Traffic and Car service Balances Receivable.....	1,456,871.99	951,236.22	505,635.77	Unmatured Rents Accrued... ..	292,824.71	302,212.91	—9,388.20
Net Balance Receivable from Agents and Conductors	1,817,466.18	1,870,564.90	—53,098.72	Other Current Liabilities... ..	604,332.92	403,349.09	200,983.83
Miscellaneous Accounts Receivable	3,596,887.85	4,226,091.19	—629,203.33	Total	\$23,428,302.39	\$22,641,275.79	\$787,026.60
Material and Supplies.....	12,007,235.36	13,963,479.84	—1,956,244.48	DEFERRED LIABILITIES:			
Interest and Dividends Receivable	416,694.14	327,090.43	89,603.71	Other Deferred Liabilities... ..	\$211,845.23	\$140,343.07	\$71,502.16
Rents Receivable.....	36,000.00	34,000.00	2,000.00	Total	\$211,845.23	\$140,343.07	\$71,502.16
Other Current Assets.....	204,372.34	168,010.77	36,361.57	UNADJUSTED CREDITS:			
Total	\$27,874,797.00	\$27,497,874.82	\$376,922.18	Tax Liability	\$2,693,063.35	\$2,354,154.99	\$338,908.36
DEFERRED ASSETS:				Insurance and Casualty Reserves	24,463.44	16,768.19	7,695.25
Working Fund Advances... ..	\$24,465.43	\$239,778.75	—\$215,313.32	Operating Reserves		48,521.08	—48,521.08
Other Deferred Assets.....	88,853.68	185,109.70	—96,256.02	Accrued Depreciation—Equipment	7,967,563.72	7,017,839.98	949,723.74
Total	\$113,319.11	\$424,888.45	—\$311,569.34	Other Unadjusted Credits... ..	1,144,353.76	1,135,290.15	9,063.61
UNADJUSTED DEBTS:				Total	\$11,829,444.27	\$10,572,574.39	\$1,256,869.88
Rents and Insurance Premiums Paid in Advance.....	\$93,354.08	\$26,030.77	\$67,323.31	CORPORATE SURPLUS:			
U. S. Govt. Guaranty under Transportation Act.....		660,448.74	—660,448.74	Additions to Property through Income and Surplus.....	\$669,558.45	\$564,211.56	\$105,346.89
Other Unadjusted Debts.....	613,745.00	336,389.80	277,355.20	Profit and Loss.....	35,664,937.22	29,646,643.77	6,018,293.45
Total	\$707,099.08	\$1,022,869.31	—\$315,770.23	Total	\$36,334,495.67	\$30,210,855.33	\$6,123,640.34
Grand Total	\$502,999,887.56	\$474,306,328.58	\$28,693,558.98	Grand Total	\$502,999,887.56	\$474,306,328.58	\$28,693,558.98
NOTE—The following Securities not included in Balance Sheet Accounts:				NOTE:			
Securities Issued or Assumed—Unpledged	\$3,064,500.00	\$309,500.00	\$2,755,000.00	The following Capital Liabilities not included in Balance Sheet Accounts:			
Securities Issued or Assumed—Pledged	22,211,500.00	6,818,500.00	15,393,000.00	Funded Debt—Unpledged... ..	\$3,064,500.00	\$309,500.00	\$2,755,000.00
Total	\$25,276,000.00	\$7,128,000.00	\$18,148,000.00	Funded Debt—Pledged....	22,211,500.00	6,818,500.00	15,393,000.00
				Total	\$25,276,000.00	\$7,128,000.00	\$18,148,000.00

The Capital Liabilities shown above include the securities issued under the Reorganization Plan for bonds of various issues dealt with by the Plan, including \$1,640,000.00 principal amount, not acquired on December 31, 1924, which are accordingly not shown as Liabilities.

The company is guarantor jointly with other companies of the securities of certain terminal companies none of which are in default.

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Seaboard Air Line Railway Company

Report of the Directors for the Fiscal Year Ended December 31, 1924

BALTIMORE, Md., April 10, 1925.

To the Stockholders and Security Owners of the Seaboard Air Line Railway Company:

The President and Board of Directors submit the following report of the affairs of the Company for the year ended December 31, 1924:

INCOME ACCOUNT

FOR THE YEAR ENDED DECEMBER 31, 1924, COMPARED WITH YEAR ENDED DECEMBER 31, 1923.

	1924	1923	Increase
Railway Operating Revenues....	\$53,384,173.10	\$52,249,110.36	\$1,135,062.74
Railway Operating Expenses....	41,387,634.17	40,342,259.48	1,045,374.69
Net Revenue from Railway Operations	\$11,996,538.93	\$11,906,850.88	\$89,688.05
Railway Tax Accruals.....	2,442,535.36	2,204,054.28	238,481.08
Uncollectible Railway Revenues..	17,807.62	12,314.20	5,493.42
Railway Operating Income.....	\$9,536,195.95	\$9,690,482.40	*\$154,286.45
Equipment Rents—Dr.	412,865.06	1,644,548.31	*1,231,683.25
Joint Facility Rents—Dr.....	109,816.51	87,970.68	21,845.83
Net Railway Operating Income..	\$9,013,514.38	\$7,957,963.41	\$1,055,550.97
Other Income	1,035,318.48	516,756.60	518,561.88
Gross Income	\$10,048,832.86	\$8,474,720.01	\$1,574,112.85
Rents and Other Charges.....	115,342.69	107,095.10	\$8,247.59
Applicable to Interest.....	\$9,933,490.17	\$8,367,624.91	\$1,565,865.26
Fixed Interest Charges.....	6,601,412.68	6,095,245.36	\$506,167.32
Annual Allotment of Discount on Securities	253,134.09	252,938.81	195.28
Interest Adjustment Mortgage (Income) Bonds	1,250,000.00	625,000.00	625,000.00
Net Income	\$1,828,943.40	\$1,394,440.74	\$434,502.66

*Decrease.

Funded Debt

During the year \$5,554,000 First and Consolidated Mortgage, Series "A," Six Per Cent. (6%) Gold Bonds, due 1945, were delivered to the Company by the Trustee of the First and Consolidated Mortgage, in reimbursement of the Treasury for expenditures, under the provisions of the mortgage. Of these bonds, \$5,107,500 were pledged with the Secretary of the Treasury under the provisions of loans received from the United States under Section 210 of the Transportation Act, and the balance of \$446,500 were held in the Company's Treasury at the close of the year.

During the year \$6,420,000 Refunding Mortgage Four Per Cent. (4%) Gold Bonds, due 1959, were delivered to the Company by the Trustee of the Refunding Mortgage, under the provisions of said mortgage, and were pledged under the Company's First and Consolidated Mortgage, as therein provided.

Under equipment Trust Agreement, Series "W," Philadelphia Plan, referred to in 1923 Annual Report, there was issued and delivered during 1924, \$1,620,000 principal amount of 6% Equipment Trust Certificates payable in twenty-seven semi-annual instalments of \$60,000 each on the 15th day of June and the 15th day of December in each year, commencing June 15, 1924, and ending June 15, 1937.

Since the close of the year Equipment Trust Agreement, Series "X," Philadelphia Plan, dated January 1, 1925, has been entered into with Bankers Trust Company, as Trustee, and \$3,390,000 principal amount of 5% Equipment Trust Certificates were issued and delivered thereunder on January 26, 1925. Said certificates are payable in thirty semi-annual instalments of \$113,000 each, maturing July 1 and January 1 in each year, beginning July 1, 1925, and ending January 1, 1940. The equipment to be acquired under this Trust is hereinafter enumerated.

Equipment Trust Certificates aggregating \$1,755,000 matured during the year and were taken up, \$12,000 were purchased during the year prior to maturity.

Equipment

The Company's equipment program begun in 1922, involving the purchase of new locomotives and equipment and the rebuilding of freight cars was continued in 1924. At the close of the year of a total of 19,620 Company's freight cars, 5,726 were purchased new since May, 1922 and 9,575 cars have been rebuilt since that date, making a total of 15,301 cars purchased new or rebuilt since May, 1922, 78% of the total number of Company's cars. The acquisition of the new and rebuilt equipment is favorably reflected in the fact that at the close of the year only 2.91% of the Company's freight cars on line were in unserviceable condition awaiting repairs.

At the close of the year only 14.4% of the Company's locomotives were awaiting repairs, 9.1% being in need of classified repairs and 5.3% requiring minor running repairs.

General Remarks

Business conditions in the territory served by the Seaboard Air Line Railway are generally prosperous and continued business and

agricultural activity is indicated for 1925. The development in Seaboard territory is marked. While in sections of the South the boll-weevil continued to affect the cotton crop, 1924 produced the largest number of bales since 1914. The South is now profiting by the extension of diversification of crops. The production of vegetables for eastern and western markets by Florida, the Carolinas and other Southern States is rapidly increasing. This class of long haul tonnage presents continued opportunities to this railroad as does the production of citrus fruits in Florida. The extensive program of highway building in the several Southern States is contributing tonnage to the railroad in hauling roadway materials and to the rapid growth and development of the rural sections. There is a steady increase in manufacture of cotton goods in the South, now the center of this industry.

Gross revenues increased \$1,135,062.74. Freight revenues increased \$1,719,017.57. The number of revenue tons carried during 1924 was 15,427,627, an increase over the previous year of 432,611 tons, or 2.9%. The number of tons of revenue freight carried one mile increased 6%, there being a corresponding increase in the number of revenue tons carried one mile per mile of road.

Passenger train revenue decreased \$526,142.19. The decrease in passenger train revenue was caused largely by the reduction in local passenger train mileage through discontinuing a large number of local trains non-productive in net revenues. There should be a large steady increase in the long haul through passenger business especially in the winter months. The tourist movement from the East and Middle West to Florida and other portions of the South is greatly increasing and will continue to increase in the recognition that no other section of the United States presents such opportunity for development and recreation.

The increase of \$1,045,374.69 in operating expenses is accounted for by increased expenditures for maintenance of \$1,294,479.35. Transportation expenditures decreased \$342,468.49 notwithstanding substantial increase in freight traffic. The transportation ratio was 37.42% compared with 38.89% in 1923 and 40.86% in 1922. The number of revenue tons per train mile increased 3%. Substantial savings were effected in transportation expenses through favorable fuel contracts and economies in the use of fuel.

The acquisition of new equipment and the furtherance of the Company's rebuilding program inaugurated in 1922 resulted in large reductions in equipment rents during the year. The net amount paid for equipment rents in 1924 was \$412,865.06, a reduction of \$1,231,683.25 as compared with 1923 and a reduction of \$2,579,109.60 as compared with 1922, the year in which this Company suffered the most as a result of the under-maintenance of its equipment during Federal control.

For sometime it had become apparent to the President of this railroad that the State of Florida presented unusual opportunities for development by railroad, and that the position of the Seaboard Air Line Railway in that State was not sufficiently assured to delay the extension of its lines in various directions. The Seaboard was not receiving the share of business originating in territory to which it was justly entitled and the development of Florida was retarded because of the lack of railroad facilities between the two coasts of its peninsula, long apparent to the President of the Seaboard if Florida was to attain its full measure of prosperity. Accordingly, as early as 1913, your President began investigations in respect to the construction of a cross-state railroad in Florida to connect the East and West Coasts in the public interest and to provide the Seaboard Air Line with entrance to territory revenue which it was clearly entitled to receive. It was not alone the purpose to construct a cross-state railroad but at the same time to give through connection at Coleman on the Jacksonville-Tampa main line with eastern and western points.

The European War beginning in 1914 necessitated the temporary abandonment of these plans. Federal control of the railroads further deferred the undertaking as it necessitated financing the rehabilitation of the Company's equipment which had been grossly under-maintained during Federal control. The financing of the cross-state railroad proposed was necessarily most difficult not alone because of the fact that no new construction of moment had been inaugurated by the railroads since Federal control, but Seaboard credit had been affected during the progress of, and because of the condition of the property incident to, Federal control.

Satisfied of the necessity as early as possible of beginning the work mentioned, the Florida Western & Northern Railroad Company was incorporated and the construction of 238 miles of railroad was begun, to finance which \$7,000,000 of that Company's First Mortgage 7% Sinking Fund Gold Bonds, Series "A," due May 15, 1934, guaranteed by Seaboard Air Line Railway Company, were issued and sold. At the date of the submission of this report the 204 miles of main line between Coleman and West Palm Beach, Florida, is in operation for both freight and passenger service, and the construction of the Gross-Callahan cut-off, approximately 13

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miles, in the vicinity of Jacksonville, Florida, which will shorten the mileage and result in substantial saving of time in the movement of through passenger trains and perishable freight business, is nearing completion. The Valrico cut-off, 11 miles, will shorten the distance across the State and is now under construction.

The Florida Western & Northern Railroad Company has been leased by the Seaboard Air Line Railway Company for a period of 999 years. This new cross-state line of the Seaboard constitutes the only through line to both the East and West Coasts and

Central Florida to and from the East and West, and the short line over the Seaboard's own rails from Richmond, Virginia. The construction of this new mileage will add materially to the revenues of the Seaboard Air Line Railway.

The Directors desire to express appreciation to the officers and employees of the Company for their loyal support, co-operation and efficient service.

S. DAVIES WARFIELD,
President.

TABLE NO. 2—GENERAL BALANCE SHEET, DECEMBER 31, 1924.

ASSETS		LIABILITIES	
INVESTMENTS:		CAPITAL STOCK:	
Investment in Road and Equipment:		Common Capital Stock Issued.	\$40,041,000.00
Road	\$168,702,765.94	Less: { Pledged as Collateral.	3,021,600.00
Equipment	40,262,270.41	{ In Treasury	300.00
General Expenditures	572,747.24		\$37,019,100.00
		Preferred 4-2% Capital Stock	
Sinking Funds	1,074.02	Issued	25,000,000.00
Deposits in Lieu of Mortgaged Property Sold	149,255.30	Less: Pledged as Collateral...	1,105,900.00
Miscellaneous Physical Property	863,610.27		23,894,100.00
Investments in Affiliated Companies:		Preferred 6% Capital Stock Is-	
Stocks—Pledged	3,468,956.34	sued	2,273,100.00
Stocks—Unpledged	257,691.23	Less: { Pledged as Collateral	2,235,000.00
Bonds—Pledged	1,224,554.23	{ In Treasury	800.00
Bonds—Unpledged	99,156.00		37,300.00
Notes—Pledged	882,999.92	Total	\$60,950,500.00
Notes—Unpledged	466,403.60	FUNDED DEBT UNMATURED:	
Advances	5,257,861.44	Equipment Obligations	28,332,687.47
		Less: { Pledged as Collateral.	9,302,687.47
Other Investments:		{ In Treasury	1,839,000.00
Stocks—Pledged	400,026.00		17,191,000.00
Stocks—Unpledged	85,546.82	Mortgage Bonds Proprietary	
Bonds—Pledged	9,850.00	Companies	38,608,000.00
Bonds—Unpledged	8,000.00	Less: Pledged as Collateral...	5,949,000.00
Notes	29,386.00		32,659,000.00
Advances	311,647.38	S. A. L. Railway First Mort-	
		gage Bonds	39,775,000.00
Total	223,053,802.14	Less: Pledged as Collateral...	27,000,000.00
CURRENT ASSETS:			12,775,000.00
Cash with Treasurer	\$2,094,620.07	S. A. L. Railway Refunding	
Cash in Transit	1,030,610.18	Mortgage Bonds	65,181,000.00
		Less: Pledged as Collateral...	45,831,000.00
Special Deposits—Cash with Fiscal Agencies	855,272.08		19,350,000.00
and Trustees	42,338.68	S. A. L. Railway Company	
Loans and Bills Receivable	1,392,179.15	First and Consolidated Mort-	
Traffic and Car Service Balances Receivable	258,297.50	gage Bonds, Series "A"	54,303,000.00
Net Balances Receivable from Agents and		Less: { Pledged as Collateral	26,078,500.00
Conductors	88,815.76	{ In Treasury	437,000.00
Miscellaneous Accounts Re-			27,767,500.00
ceivable:		Income Bonds:	
Individuals and Companies	1,486,599.91	S. A. L. Railway Adjustment Mortgage	
United States Government	259,929.73	Bonds	25,000,000.00
Other Companies for Claims	1,835,345.40	Miscellaneous Obligations:	
Material and Supplies	4,322,994.92	Secretary of Treasury of United States—	
Interest and Dividends Receivable	53,691.72	Notes	14,957,400.00
Rents Receivable	5,617.00	Director General of Railroads, United States	
Other Current Assets	490,366.47	—Note	2,000,000.00
Total	12,371,333.17	Total	151,699,900.00
DEFERRED ASSETS:		Non-Negotiable Debt to Affiliated Companies ..	1,114,110.41
Working Fund Advances	49,170.24	CURRENT LIABILITIES:	
Other Deferred Assets	348,183.63	Loans and Bills Payable	500,000.00
Total	397,353.87	Traffic and Car Service Balances Payable ..	1,068,720.09
UNADJUSTED DEBITS:		Audited Accounts and Wages Payable:	
Rents Paid in Advance	400,500.00†	Audited Vouchers Unpaid	3,903,363.48
Insurance Premiums Paid in Advance	71,385.18	Wages Unpaid	1,372,886.10
Discount on Funded Debt	4,425,127.13	Miscellaneous Accounts Payable:	
Claims in Suspense	266,473.23	Individuals and Companies	736,003.50
Other Unadjusted Debits	1,526,745.88	Agents Traffic Drafts	122,061.78
Total	6,690,231.42	Claim Authorities	64,918.72
GRAND TOTAL	\$242,512,720.60		922,984.00

Accumulated and unpaid interest on Adjustment Mortgage (Income) Bonds amounting to \$3,333,333.34 and payable out of future income, or otherwise, at the maturity of the bonds, is not comprehended in the above balance sheet.

†Does not include any part of \$400,000 rental due Florida Western & Northern Railroad Company May 14, 1925.

*Includes \$1,331,286.89 Operating Reserves, reported in previous years as Operating Reserves, but in accordance with Order of Interstate Commerce Commission are now reported as Other Unadjusted Credits.

This Company is liable as a Guarantor of the following Securities and Obligations:

Athens Terminal Company First Mortgage	\$100,000.00
Birmingham Terminal Company First Mortgage—Seaboard proportion 1/6 of	1,940,000.00
Fruit Growers Express Company—Payments	474,204.34
Florida Western & Northern Railroad Company First Mortgage	7,000,000.00
Georgia and Alabama Terminal Company First Mortgage	1,000,000.00
Jacksonville Terminal Company First Mortgage—Seaboard proportion 1/3 of	400,000.00
Jacksonville Terminal Company First and General Mortgage—Seaboard proportion 1/4 of	100,000.00
Jacksonville Terminal Company Refunding and Extension Mortgage—Seaboard proportion 1/4 of	3,100,000.00
Macon, Dublin & Savannah Railroad Company First Mortgage ..	\$1,529,000.00
Raleigh and Charleston Railroad Company Prior Lien and Consolidated Mortgages	550,000.00
Richmond-Washington Company Collateral Trust Mortgage—Seaboard proportion 1/6 of	10,000,000.00
Savannah and Statesboro Railway Company First Mortgage ..	185,000.00
Southeastern Investment Company—Note	150,000.00
Tampa and Gulf Coast Railroad Company First Mortgage	750,000.00
The Seaboard-Bay Line Company—Payments	250,000.00
The Seaboard-Bay Line Company—Notes to Secretary of Treasury of United States	3,925,000.00
Wilmington Railway Bridge Company Consolidated Mortgage—Seaboard proportion 1/4 of	217,000.00

Interest Matured Unpaid:	
Funded Debt	700,355.75
Equipment Trust Obligations	12,432.89
	712,788.64
Dividends Matured Unpaid	9.00
Funded Debt Matured Unpaid	26,750.00
Unmatured Interest Accrued:	
Funded Debt	1,842,323.67
Equipment Trust Obligations	292,968.64
Unfunded Debt	1,283.33
	2,136,575.64
Unmatured Rents Accrued	25,428.55
Other Current Liabilities	203,007.15
Total	10,872,512.65
DEFERRED LIABILITIES:	
Other Deferred Liabilities	517,782.58
UNADJUSTED CREDITS:	
Accrued Taxes	674,837.06
Accrued Depreciation—Equipment	5,771,619.16
Reserve for Outstanding Stock of Proprietary Companies	19,426.41
Other Unadjusted Credits	2,049,443.06*
Total	8,515,325.69
CORPORATE SURPLUS:	
Additions to Property through Income and Surplus	355,872.35
Funded Debt Retired through Income and Surplus	3,938.10
Profit and Loss—Surplus	8,482,778.82
Total	8,842,589.27
GRAND TOTAL	\$242,512,720.60

[ADVERTISEMENT]

(Continued from page 1177)

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA			
	1924	1923	Increase or decrease
Average mileage operated.....	1,749,19	1,749,19	
Railway operating revenues.....	\$28,363,234	\$27,915,736	—\$447,498
Maintenance of way.....	\$3,653,661	\$3,717,699	\$64,037
Maintenance of equipment.....	5,678,518	5,074,994	—603,524
Transportation	12,818,667	12,037,511	—781,156
Total operating expenses.....	\$23,516,147	\$22,189,824	—\$1,326,324
Net revenue from operations.....	\$4,847,087	\$5,725,913	\$878,826
Railway tax accruals.....	1,598,503	1,615,940	17,436
Railway operating income.....	\$3,236,381	\$4,096,901	\$860,520
Equipment rents	\$207,466	\$687,912	\$480,446
Net railway operating income.....	\$3,028,915	\$3,408,989	\$380,074
Non-operating income	237,706	251,062	13,356
Gross income	\$3,266,621	\$3,660,051	\$393,430
Rent for leased roads } Interest on funded debt }	\$2,602,156	\$2,578,398	—\$23,758
Total deductions from gross income.....	\$2,642,448	\$2,623,143	—\$19,306
Net income	\$624,173	\$1,036,908	\$412,735
Disposition of net income— Divs. on pref. stock: 7% in 1923; 5% in 1924.....	\$562,965	\$788,151	—\$225,186
Divs. on com. stock: 2½% in 1923		463,917	—463,917
Surplus for year carried to profit and loss	Def. \$627,896	\$473,943	\$1,101,839

DELAWARE & NORTHERN.—Abandonment of Branch.—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a branch line from Andes Junction, N. Y., to Andes, 8.45 miles. When the branch was built it was the intention to open summer hotels at Andes but plans for the latter did not materialize.

DETROIT & Ironton.—Acquisition.—This company has filed an application with the Interstate Commerce Commission for a certificate for the acquisition and operation of the lines of the Detroit, Toledo & Ironton, including those of the Toledo-Detroit operated by it, and alternatively for the consolidation of the properties. It is proposed to issue its securities in exchange for those of the Detroit, Toledo & Ironton and states that the applicant is better able than the Detroit, Toledo & Ironton to finance the ownership and operation of its property. The Detroit & Ironton was organized after Henry Ford acquired the D. T. & I., and at one time asked authority of the commission to lease the property of the latter but the application was later withdrawn after opposition had been expressed by some minority stockholders.

LONG ISLAND.—Equipment Trust.—The Interstate Commerce Commission has authorized an issue of \$1,095,000 of equipment trust certificates to be sold at not less than 99.25.

MINNEAPOLIS & ST. LOUIS.—Receiver's Certificates.—The Interstate Commerce Commission has authorized an issue of \$750,000 of receiver's certificates to retire a like amount of maturing certificates.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Equipment Trust.—The Interstate Commerce Commission has authorized an issue of \$400,000 of equipment trust certificates.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—1924 Earnings.—Annual report for 1924 shows net after charges of \$20,825 equivalent to 16 cents a share on \$12,603,400 preferred stock. Net earnings in 1923 were \$1,674,992, equivalent after allowance dividends at a rate of 7 per cent on the preferred stock to \$3.14 a share on \$25,206,800 outstanding common stock. Selected items from the income statement follow:

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE			
	1924	1923	
	Soo Line	Wis. Cent. Ry.	System
Gross earnings.....	\$28,724,694	\$19,220,666	\$47,945,360
Operating expenses.....	21,261,303	15,552,552	36,813,855
Net earnings	\$7,463,391	\$3,668,114	\$11,131,505
Income from other sources.....	808,924	318,094	1,127,018
Total income	\$8,272,315	\$3,986,208	\$12,258,523
Fixed charges, taxes, etc.....	7,427,873	4,809,824	12,237,697
Addition to surplus	\$844,442	Def. 823,616	\$20,825

Figures for 1923 are given for comparison as follows:

	1923	1922	1921
Gross earnings.....	\$28,957,095	\$20,388,242	\$49,345,337
Operating expenses.....	21,889,105	15,726,030	37,615,134
Net earnings.....	\$7,067,990	\$4,662,212	\$11,730,202
Income from other sources.....	1,509,963	230,999	1,740,962
Total income.....	\$8,577,954	\$4,893,211	\$13,471,165
Fixed charges, taxes, etc.....	7,336,525	4,459,647	11,796,172
Addition to surplus	\$1,241,429	\$433,563	\$1,674,992

MISSOURI-KANSAS-TEXAS.—Kansas City Southern Interest.—The Wall Street Journal says that the Kansas City Southern interests now own about 25 per cent or more than 250,000 of the 1,049,414 outstanding shares of the Missouri-Kansas-Texas, the former's holdings consisting mainly of common stock, of which 806,755 shares of no par value are outstanding. Inasmuch as large blocks of Katy securities are owned by interests either allied with or friendly to Kansas City Southern bankers, it is probable, the Wall Street Journal says, the latter road could control much more than 25 per cent of the stock if the occasion arose. At the annual meeting last month four directors representing the Kansas City Southern were elected to the Katy board without the former showing its full strength.

MISSOURI PACIFIC.—1924 Earnings.—See excerpts from annual report appearing on adjacent pages.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—1924 Earnings.—Annual report for 1924 shows net earnings after charges of \$1,955,509 equivalent to \$12.22 per share on \$16,000,000 outstanding capital stock. Net earnings in 1923 totaled \$1,628,806 equivalent to \$10.18 a share. Selected items from the income statement follow:

NASHVILLE, CHATTANOOGA & ST. LOUIS			
	1924	1923	
Average mileage operated.....	1,259	1,258	
Railway Operating Revenues.....	\$23,601,646	\$24,801,787	
Maintenance of way	\$3,573,811	\$4,405,882	
Maintenance of equipment.....	5,325,381	5,919,108	
Transportation	8,806,185	9,466,281	
Total Operating Expenses.....	\$19,480,970	\$21,453,047	
Operating ratio	82.54	86.50	
Net Revenue from operation.....	\$4,120,677	\$3,348,740	
Railway tax accruals	651,900	701,900	
Total railway operating income.....	\$3,468,777	\$2,646,840	
Equipment rents, net.....	Dr. 149,752	Cr. 305,292	
Joint facility rents, net cr.....	118,415	114,510	
Net Railway Operating Income.....	\$3,433,767	\$3,061,971	
Total non-operating income.....	290,208	337,482	
Gross Income	\$3,723,975	\$3,399,454	
Rent for leased roads.....	\$806,506	\$806,506	
Interest on funded debt.....	940,556	943,699	
Total Deductions from Gross Income.....	\$1,768,466	\$1,770,648	
Net Income	\$1,955,509	\$1,628,806	
Dividends, 7 per cent.....	\$1,120,000	\$1,120,000	

NEW YORK CENTRAL LINES.—Equipment Trust.—The New York Central, Michigan Central and Cleveland, Cincinnati, Chicago & St. Louis have applied to the Interstate Commerce Commission for authority for an issue of \$10,530,000 of New York Central Lines 4½ per cent equipment trust certificates, which it is expected will be sold to J. P. Morgan & Co., at not less than 96.43.

NORFOLK SOUTHERN.—New Control.—Control of the Norfolk Southern passed on May 1 to Ernest Williams, through the acquisition of 50,000 shares from Marsden J. Perry. It is understood that Mr. Williams will succeed Mr. Perry as chairman of the board of directors. In making the announcement of the purchase of the stock, Mr. Williams said that there were no negotiations pending or at present contemplated for the sale of the road to other interests. The new management, he said, will devote its attention to building up the property.

Mr. Williams has been associated with the Norfolk Southern since 1921 and is vice-president of the company with headquarters at Lynchburg, Va. He is president of the Williams-McKeithan Lumber Company of Lynchburg and is understood to be affiliated with the Duke interests. He was formerly president of the Durham & Southern of which property B. N. Duke is now president. It is reported that closer relations may be effected between the

Norfolk Southern and the Durham & Southern and also the Piedmont & Northern, of which J. B. Duke is vice-president and a director and that plans for extension of the last named are being considered.

The Norfolk Southern operates 932 miles of railroad inclusive of 42 miles of electric lines. Its lines extend from Norfolk, Va., via Raleigh, N. C., to Charlotte, N. C., with branches to Beaufort, Goldsboro, Durham, Fayetteville, Asheboro, etc. A traffic agreement exists with the Southern Railway relative to business moving in and out of Norfolk, Va. The company has outstanding \$16,000,000 capital stock and about \$19,000,000 funded debt inclusive of equipment notes. No dividends have been paid since 1914. Net earnings after charges in 1924 were equivalent to \$2.55 a share on the stock outstanding.

NORTHERN PACIFIC.—Abandonment of Branch.—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of 2.46 miles of line between Duncan Mills, Calif., and Markham in Sonoma County. The branch was built to serve a lumber operation but the timber has been cut and the mill destroyed by fire. Negotiations to turn the right of way over to the county for a highway are in progress.

NORFOLK & WESTERN.—Acquisitions of Two Small Lines Approved.—The Interstate Commerce Commission has issued a certificate authorizing the Norfolk & Western to purchase the line and bridge of the Kermit-Warfield Bridge Company in Mingo County, Ky., and to lease the Buck Creek Railroad in Martin County, Ky. The two lines were built in the interest of the Himler Coal Company and together total 1.54 miles in length. The line connects with the Big Sandy line of the Norfolk & Western and reaches coal deposits aggregating 10,000,000 tons and supplying about 20 cars of coal daily. It is represented to be the intention of the Norfolk & Western ultimately to extend the line to reach coal deposits aggregating 100,000,000 tons, beginning about 1.5 miles beyond the present terminus of the Buck Creek.

NORFOLK TERMINAL.—Valuation.—The Interstate Commerce Commission has issued a valuation report finding the final value for rate-making purposes of the property owned and used for common-carrier purposes to be \$995,000 as of June 30, 1914.

PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—Six Months Guaranty.—The Interstate Commerce Commission has issued a final certificate placing the amount of this company's guaranty for the six months period following the termination of federal control at \$16,521,446, of which \$6,421,446 was to be paid on the final certificate.

RICHMOND, FREDERICKSBURG & POTOMAC.—1924 Earnings.—The annual report for 1924 shows net income available for dividends of \$2,405,819 as compared with \$2,297,035 in 1923. Selected items from the income statement follow:

RICHMOND, FREDERICKSBURG & POTOMAC			
	1924	1923	Increase or decrease
Average mileage operated.....	122	122	.....
Railway operating revenues.....	\$11,836,355	\$12,077,813	—\$241,458
Maintenance of way.....	\$1,400,637	\$1,217,062	\$183,575
Maintenance of equipment.....	1,804,151	1,813,408	—9,257
Transportation.....	3,931,088	4,214,377	—283,290
Total operating expenses.....	\$7,895,344	\$7,936,776	—\$41,432
Net revenue from operations.....	\$3,941,011	\$4,141,037	—\$200,026
Railway tax accruals.....	667,206	674,717	—7,511
Railway operating income.....	\$3,272,544	\$3,466,093	—\$193,549
Equipment rents—Dr. Bal.....	\$514,488	\$502,163	\$12,325
Joint facility rents—Dr. Bal.....	130,182	152,595	—\$22,413
Net railway operating income.....	\$2,627,875	\$2,811,335	—\$183,461
Total non-operating income.....	160,429	172,646	—12,217
Gross income.....	\$2,788,303	\$2,983,982	—\$195,678
Interest on funded debt.....	\$373,211	\$378,833	—\$5,622
Total deductions from gross income..	\$382,484	\$686,947	—\$304,463
Net income.....	\$2,405,819	\$2,297,035	\$108,785
Income applied to sinking and other reserve funds.....	.....	\$300,000	—\$300,000
Surplus for year carried to profit and loss.....	\$2,405,819	\$1,997,035	\$408,785

SAN ANTONIO & ARANSAS PASS.—1924 Earnings.—Annual report for 1924 shows a net loss after charges of \$653,819 as compared with a deficit in 1923 of \$523,286.

SEABOARD AIR LINE.—1924 Earnings.—Annual report for 1924 shows net income after charges including 5 per cent interest on the adjustment bonds of \$1,828,943 equivalent after allowing for dividends on the 4 per cent and 6 per cent preferred stocks to \$2.35 a share on \$37,019,100 common stock. Net income in 1923 was \$1,394,441 after the deduction of only 2½ per cent interest on the adjustment mortgage bonds. See excerpts from annual report on adjacent pages.

SOUTHERN PACIFIC.—1924 Earnings.—See excerpts from annual report appearing on adjacent pages.

ULSTER & DELAWARE.—1924 Earnings.—Annual report for 1924 shows net earnings after charges of \$11,125 as compared with \$15,796 in 1923.

UNION PACIFIC.—Correction.—In the excerpts for the annual report for 1924 that appeared in the *Railway Age* for May 2, 1925, page 1115, there were typographical errors in the tabular matter as follows:

Page No.	Item	As Shown	Should be
1115	Common stock (in footnote).....	\$222,291,609	\$222,291,600
1117	Bonds, Notes and Equipment Trust Certificates (1923)	\$82,261,647.32	\$82,261,637.32
1117	Traffic and Car Service Balances Receivable (1923)	\$5,994,496.60	\$5,944,496.60
1117	Decrease for item first above.....	\$1,633,830.00	\$1,633,830.90
1118	Dividend on Common Stock payable first proximo (1924).....	\$5,557,299.00	\$5,557,290.00

WABASH.—Authorized to Issue Notes.—The Interstate Commerce Commission has granted authority to issue \$1,500,000 of 6 per cent secured gold notes in denominations of \$5,000 in subdivision of a note for the same amount heretofore issued to the Director General of Railroads and sold by him. Application requesting authority to pledge bonds of the Chicago & Western Indiana and stock of the American Refrigerator Transit Company as collateral security for these notes was dismissed, such authorization not being held necessary on the ground that the applicant has not assumed liability with reference to these securities.

WESTERN MARYLAND.—1924 Earnings.—Annual report for 1924 shows net income after charges of \$574,148 as compared with \$1,671,169 in 1923. Selected items from the income statement follow:

WESTERN MARYLAND			
	1924	1923	Increase or decrease
Net Railway Operating Revenues.....	\$19,135,563	\$23,055,036	—\$3,919,474
Maintenance of way.....	\$2,942,390	\$2,919,972	\$22,418
Maintenance of equipment.....	3,987,192	5,882,271	—1,895,079
Transportation.....	6,112,632	7,736,945	—1,624,313
Total Operating Expenses.....	\$14,165,409	\$17,716,434	—\$3,551,025
Net Revenue from Operations.....	4,970,154	5,338,602	—368,449
Railway tax accruals.....	\$915,000	\$1,004,140	—\$89,140
Railway operating income.....	\$4,053,579	\$4,334,239	—\$280,659
Hire of Equipment Net.....	—\$258,780	\$581,360	—\$840,140
Joint facility rents.....	\$21,446	\$24,799	—\$3,352
Net Railway Operating Income.....	\$3,560,637	\$4,621,552	—\$1,060,915
Non-operating income.....	104,917	188,535	—83,619
Gross Income.....	\$3,665,554	\$4,810,087	—\$1,144,534
Rent for leased roads.....	\$65,130	\$65,130	.....
Interest on funded debt.....	2,611,867	2,642,036	—30,169
Total Deductions from Gross Income..	\$3,091,406	\$3,138,918	—\$47,512
Net Income.....	\$574,148	\$1,671,169	—\$1,097,021

Dividends Declared

Cleveland & Pittsburgh.—1¼ per cent, regular guaranteed; 1 per cent, quarterly; special guaranteed, quarterly, both payable June 1 to holders of record May 9.

Maine Central.—Preferred, 1¼ per cent, quarterly, payable June 1 to holders of record May 15.

New York, Chicago & St. Louis.—Common, 1½ per cent, quarterly, preferred, 1¼ per cent, both payable July 1 to holders of record May 15.

Trend of Railway Stock and Bond Prices

	May 5	Last Week	Last Year
Average price of 20 representative railway stocks.....	79.91	77.87	63.87
Average price of 20 representative railway bonds.....	91.00	90.24	85.27

Railway Officers

Executive

F. E. Lagerholm has been appointed assistant to the vice-president of the Piedmont & Northern and the Durham & Southern, and W. T. Gill has been appointed assistant to the general manager, both with headquarters at Charlotte, N. C.

Ernest M. Willis, whose appointment as executive assistant of the Northern Pacific has been previously announced in these columns, was born on April 2, 1885, at Dungannon, Ont., and

was educated at the public schools of his province. He entered railway service in October, 1905, as a stenographer in the employ of the Chicago Great Western and in March, 1907, he resigned to engage in similar work for the Northern Pacific. In June, 1909, he became chief clerk to the president of this company at St. Paul and in August, 1913, went to Boston, Mass., as secretary to the chairman of the board of directors of the New York, New Haven & Hartford. In May, 1916, he was promoted to the

position of assistant to the president of this company, with offices in the same city. Two years later he was appointed assistant secretary and assistant treasurer of the Northern Pacific, with headquarters at New York, which position he held until his appointment as executive assistant, with offices at St. Paul.

Morris Rutherford, who has been elected president and general manager of the Lehigh & Hudson River, with headquarters at Warwick, N. Y., was born on December 31, 1864, at

Eastridge, N. J. He received his education at Newark Academy, Newark, N. J., and at St. John's School, Sing Sing, N. Y., and entered railway service on December 1, 1883, as an errand boy in the accounting department of the Lehigh & Hudson River, where he held various clerical positions until he was appointed paymaster in 1885. From 1886 to 1905, he held the following positions successively: assistant general freight agent, general freight agent, and general freight and passenger agent. In 1905,

during a general reorganization of the company, Mr. Rutherford was elected vice-president and general manager, and has served in that capacity, with the exception of about two years as general manager under the United States Railroad Administration, until his recent election to the presidency of the company.



E. M. Willis



Morris Rutherford

G. F. Stephens and M. E. Pangle have been appointed assistants to the vice-president in charge of personnel of the Chicago & North Western, with headquarters at Chicago.

Henry Tatnall, vice-president in charge of finance of the Pennsylvania, who retired under the pension rules of the company on May 1, was born on April 30, 1855, at Wilmington,



Henry Tatnall

Del. He began his business career as a clerk in a real estate office in that city, and entered the service of the Girard Trust Company, Philadelphia, in 1879, in the same capacity. Two years later he became treasurer of that company, and from 1885 to 1900 was vice-president. He then became president of the Franklin National Bank in Philadelphia, and on May 19, 1904, was elected sixth vice-president and treasurer of the Pennsylvania. Since March 24, 1909, when he was elected a director and fourth vice-president of this

company, he has been in charge of the finances of it and its subsidiaries. In 1912 the title of his office was changed to vice-president in charge of finance. Mr. Tatnall, at the time of his retirement, was serving as a director of 115 of the Pennsylvania's subsidiary corporations and as vice-president of 67 of them.

Clarence William Huntington, who has resigned the presidency of the Virginian, was born on May 31, 1857, at Newark, N. J., and was educated at Newark Academy and at Dorchester High School,



C. W. Huntington

Boston, Mass. He entered railway service in 1876 as a freight brakeman on the Chicago, Rock Island & Pacific and continued with that company in various capacities until 1892, when he became assistant superintendent of the Des Moines, Northern & Western (now a part of the Chicago, Milwaukee & St. Paul). He later served as superintendent of the same road, and left it in 1894 to become general superintendent of the Iowa Central (now a part of the Minneapolis & St. Louis), which position

he left in 1902 to become general superintendent of the Central of New Jersey, with headquarters at New York. In 1914 he was elected vice-president and general manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., and two years later became chairman of the board of directors of the Virginian. On March 1, 1917, he was elected president of the company, and continued in that capacity until the time of his recent resignation.

Charles H. Hix, vice-president of the Virginian, with headquarters at Norfolk, Va., has been elected president, with the same headquarters. He was born on April 5, 1862, in Nelson county, Va., and entered railway service in 1880, as a rodman on the Norfolk & Western. A year later he became a clerk for the same road at Saltville, Va., and later served as assistant agent and operator at the same point. In 1884 he went to

Bufoed, Va., as agent, and thereafter served for a short time in the same capacity at Roanoke. In 1888 he became train dispatcher at Roanoke and in 1891 was promoted to chief dispatcher. Six years later he was given the title of trainmaster in addition to his duties as chief dispatcher. In 1900 he became a trainmaster for the Seaboard Air Line, and the following year was promoted to superintendent of the First division. In 1905 he was advanced to general superintendent and, in 1909, to general manager. A few months later he was elected also vice-president, and three years later became president and general manager of the Norfolk Southern. From 1914 to the period of federal control he was out of railroad service, but returned during federal control to the federal managership of the Norfolk & Portsmouth Belt Line and the Virginian. At the termination of federal control, he became vice-president of the Virginian, in which capacity he served until his recent election to the presidency.

Operating

A. S. Critchfield has been appointed trainmaster of the Lake Superior division of the Northern Pacific, with headquarters at Duluth, Minn.

I. A. Guier has been appointed supervisor of work equipment of the Atchison, Topeka & Santa Fe, eastern lines, with headquarters at Topeka, Kan.

G. D. Hughey has been appointed superintendent of the Champlain division of the Delaware & Hudson, succeeding H. M. Gargan, who has resigned.

J. P. Johnson, division superintendent on the Canadian National, with headquarters at Saskatoon, Sask., has been transferred to the Dauphin division, with headquarters at Dauphin, Man., succeeding **T. J. Brown**, deceased.

F. W. Lyons, trainmaster of the Minnesota division of the Northern Pacific, has been appointed trainmaster of the newly created Fargo division, which includes the former Minnesota and Fargo divisions, with headquarters at East Grand Forks, Minn. **Theodore Harris**, trainmaster on the Minnesota division, has also been transferred to the Fargo division, with headquarters at Staples, Minn.

V. S. Andrus, whose promotion to assistant to the general manager of the Southern Pacific, with headquarters at San Francisco, Cal., was reported in the *Railway Age* of April 18, was born in 1888 at Lansing, Mich. He entered railway service as an office boy on the Chicago, Milwaukee & St. Paul in 1905 and was employed in 1907 and 1908 in station and yard service on the Chicago & North Western. He was employed by the Southern Pacific as a station agent in May, 1908, and in February, 1909, was transferred to the office of the division superintendent. Mr. Andrus was assigned to road service as a brakeman in November, 1909, and in July, 1911, entered upon a course of study of railroad operation prescribed by the company. In January, 1914, he was appointed special inspector in the office of the general manager, and in December, 1915, was promoted to assistant trainmaster of the Western division. He was promoted to transportation inspector in January, 1917, and in September, 1918, was promoted to trainmaster of the Salt Lake division. Mr. Andrus was promoted to assistant superintendent of transportation in April, 1920, and held that position until his recent promotion to assistant to the general manager.

Traffic

J. P. Wahle has been appointed assistant general freight agent of the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kan.

C. W. Boynton, general agent of the Boston & Maine, with headquarters at Boston, has been appointed foreign freight agent, with the same headquarters. **Harrison Brown**, general agent with headquarters at Pittsburgh, Pa., has been appointed general agent, with headquarters at Boston, succeeding Mr. Boynton.

Mechanical

N. P. White, master mechanic of the Minnesota division of the Northern Pacific, has been transferred to the Lake Superior division, with headquarters at Duluth, Minn., succeeding **J. A. Marshall**, who has been appointed assistant master mechanic of the Fargo division, with headquarters at Staples, Minn. The Fargo division is a consolidation of the former Minnesota and Fargo divisions.

Engineering, Maintenance of Way and Signaling

T. B. Ramsey has been appointed signal inspector of the Western general division of the Chesapeake & Ohio, succeeding Charles Persinger, assigned to other duties.

A. M. Clark, chief draftsman in the engineering department of the New York, Chicago & St. Louis, at Cleveland, Ohio, has been promoted to division engineer of the Ft. Wayne and Chicago divisions, with headquarters at Ft. Wayne, Ind., succeeding G. E. Potter, deceased.

F. P. Gutelius, Jr., division engineer of the Delaware & Hudson, at Plattsburg, N. Y., has been transferred to Oneonta, N. Y., succeeding G. D. Hughey, promoted. **W. J. H. Manning** has been appointed division engineer at Plattsburg, succeeding Mr. Gutelius, and **P. O. Ferris** has been appointed assistant engineer, maintenance of way, with headquarters at Albany, succeeding Mr. Manning.

J. R. W. Davis, engineer maintenance of way of the Great Northern, with headquarters at St. Paul, Minn., has been promoted to chief engineer, with the same headquarters, succeeding **A. H. Hogeland**, who has been appointed consulting engineer, a newly created position. Mr. Davis was born on October 26, 1868, and graduated from Lehigh University in 1891. He entered railway service in July of that year as a rodman on the New York, Lake Erie & Western, now a part of the Erie, and in April, 1892, was promoted to assistant supervisor. He was promoted to assistant engineer in December, 1892, and held that position until February, 1898, when he was promoted to division engineer on the Chicago & Erie. Mr. Davis was promoted to engineer maintenance of way of the Erie in April, 1900. He was appointed engineer maintenance of way of the Chicago & Alton in January, 1901, where he remained until November, 1901, when he returned to the Erie as engineer maintenance of way. Mr. Davis was appointed engineer maintenance of way of the Great Northern in September, 1903, which position he held until his promotion to chief engineer.

Obituary

Leroy Trice, formerly vice-president and general manager of the International-Great Northern, who retired from active service in 1907, died at Mineral Wells, Texas, on April 21.



A Miss is as Good as a Mile—Said the Signal Bridge!